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Chapter 1. Cautions and Warnings

1.1. Copyright Notice and Disclaimer

1.2. Introduction to G-scan2

1.3. Safety warnings and cautions

1.4. Warnings for environment protection

1.1 Copyright Notice and Disclaimer

Cautions and Warnings | AA-1-1. Copyright Notice and Disclaimer

Thank you for purchasing G-scan2 supplied by GIT(Global Information Technology) Co., Ltd.
This manual contains information needed for using G-scan2.
We recommend you to read this manual and comprehend the provided functionality before start using G-scan2 in order to get the maximum performance out of the product

Copyright Notice

- G-scan and G-scan2 are copyrighted 2008-2013 by GIT Co., Ltd. All rights are reserved.
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  Even though the product has been extensively tested and evaluated, GIT Co., Ltd. cannot guarantee it will work correctly as intended with every system in every vehicle. GIT Co., Ltd. will do our best to fix any bugs and to bring enhancements to the product, but we specifically disclaim any liability for damage to the car and yourself.

- GIT Co., Ltd. reserves the right to change or modify the content of this instruction manual for both technical and non-technical product enhancement without notice. This may include scan tool graphic displays, vehicle coverage, supported functions and operating procedures. Hardware may also be modified, altered or redesigned or may differ from the descriptions and illustrations displayed in this manual.

- G-scan2 is originally designed not to show the emblems or trademarks of the car manufacturers in the menu in order not to cause infringement of intellectual property rights of the car manufacturers, therefore any attempt to alter or modify its software to show those emblems and trademarks on G-scan's screen is against the policy of GIT Co., Ltd therefore it shall be done at user's own risk and GIT Co, Ltd. shall not be held responsible.

1.2. Introduction to G-scan2

Cautions and Warnings AA-1-2. Introduction to G-scan2

Functionality

G-scan2 is designed to maximize the product efficiency by helping the users fully utilize the diagnostic and measurement functions with the user friendly interface and intuitive operations

Advanced Touch Screen Interface

Touch screen offers easy and intuitive selection of the menu or the desired function right from the screen without the complexity of pressing the buttons

7.0” Color TFT LCD

Large scale 7” TFT LCD ensures readability with striking graphical display and friendly user interface for better presentation of diagnostic information

Expandability through USB interface

Standard USB interface enables the product to host the new diagnostic devices that are going to be developed in the future

Wireless Connectivity (WLAN)

The on-board Wi-Fi module enables the software update through wireless internet connection and use of the network printer for direct printing

Large Capacity SD card

Large capacity the SD card accommodates the diagnostic programs and data, and offers sufficient storage for user’s own database build-up

2100mA Battery

Rechargeable battery enables the use of the measurement functions without external power supply and the diagnostic functions that need engine cranking without a power-cut

1.3. Safety Warnings and Cautions

This section contains warnings and cautions for safe and proper use of this product, therefore it is recommended that every user should read this section carefully before using the product and make sure that such warnings and precautions are well observed and comprehended.

Warning

Dangerous consequences may arise, with the possibility of fire, death or serious injury to the user, if the product is not handled properly as instructed below.
The user shall be fully liable for any direct or consequential damage or loss caused by not following the instructions provided in this G-scan2 user's manual.

- Use G-scan2 only for the original purposes as it was designed for.
- Keep G-scan2 within the specified storage temperature when not in use (See spec sheet)
- Place the G-scan2 at a secured location and keep clearance with any moving part of the vehicle or hazardous environment when using G-scan2 with the vehicle.
- Use only the parts and accessories authorized by GIT.
- Do not disassemble or dismantle the G-scan2 base unit in any case.
  Beware that only the service personnel authorized by GIT is entitled to provide after-sales service for G-scan2.
- Supply stable power from the external source (using AC/DC adapter) when updating G-scan2 software (Operating System, Firmware and Application updates).
  Use the power adapter and cables supplied by GIT only when supplying power from then external source.
- Make secure connections of all cables and connectors. Be careful not to let the DLC cable or power cable gets disconnected while the G-scan2 is operating.
- Observe the instructions of this user's manual when replacing the rechargeable battery.
- Do not use the rechargeable battery other than GIT supplies.
- Do not disassemble the rechargeable battery in any case.
- Do not put the rechargeable battery in the water and keep away from moisture.
- Keep the rechargeable battery from the heat.

- Do not apply physical impact to the rechargeable battery or pierce with a sharp object.
- Do not put the rechargeable battery in the microwave oven or high-voltage container.
- In case any smell, heat, distortion or discoloration is observed with the rechargeable battery, stop using it. If such a symptom is witnessed when charging or operating, remove the battery from the base unit.
- Be careful not to put the rechargeable battery in reversed polarity.
- Do not short-circuit the rechargeable battery terminals.
- Do not connect the rechargeable battery terminals directly with the external power sources.
- Do not put the rechargeable battery in fire or expose it to direct sun light.

Caution

Dangerous consequences may arise, with the possibility of serious injury to the user and or damage to the product, if the equipment is not handheld correctly as instructed below.
The user shall be fully liable for any direct or consequential damage or loss caused by not following the instructions provided in this G-scan2 user's manual.

- Put G-scan2 base unit on a secure place and avoid unstable, inclined or slippery place.
  Be careful not to drop the G-scan2 base unit.
- Avoid humidity and dusts when storing and using G-scan2 in order to prevent electric shock or fire.
- Do not put heavy objects such as hand tools on the G-scan2 base unit.
- Stow the parts and accessories that are not in use in the G-scan2 carry case.
- Avoid following hazards for storing G-scan2.
  - Too high or low temperature (See Spec sheet)
  - Too high or low humidity (See Spec sheet)
  - Exposure to direct sunlight

- Be careful not to cause damages to the cables by heat from the engine or the moving parts in the engine compartment when G-scan2 cable connection is made under the hood.
- Securely tighten the screw lockers when connecting the DLC main cable to the G-scan2 base unit.
- When supplying power from the vehicle battery, check the connection for correct polarity.
- Do not carry the G-scan2 by holding the cables connected to the base unit.
- Avoid physical impart and vibration when carrying G-scan2.

- Do not put the SD card upside down when inserting to the base unit
- Use only the AC/DC adapter that is supplied with G-scan2 when supplying power from AC source

- Storing the rechargeable battery in a hot place may shorten its lifetime
- In case battery liquid gets in the eyes, do not rub and wash them with fresh running water. And see the doctor immediately

- Use the stylus pen supplied as the basic accessory of G-scan2 when touching the screen. Use of sharp or pointed object may cause serious and irrecoverable damage to the touch screen film and the LCD
- Keep LCD away from liquid or splash of water
- Liquid Crystal may run from the broken LCD. Do not touch the LCD when it is broken, and be careful not to get liquid crystal in the eyes or mouth. If contaminated by liquid crystal on the skin, remove them immediately using soap and running water
- Use soft fabric and alcohol to clean the surface of the LCD
- Do not use volatile solvents other than alcohol when cleaning the LCD
- Perform Touch Screen Calibration when the touched point is not coordinated correctly. The touch screen needs zeroing when used for an extensive period of time

1.4. Warnings for environment protection

When the product has been used up to its life-time and needs to be disposed, the rules and regulations that the government of each country has set forth for material recirculation, wasted electric/electronic product disposal or other related legal procedure shall be checked and followed. When disposing the wasted product, please observe the warning message below.

Warning

- When disposing G-scan2, do not dump it among the daily wastes. In many countries, it either shall be approved by local authorities or recollected by the local distributor.
- Disposal by burning or burying it underground without authorization is not generally allowed in most of the countries.
- Contact your local distributor to consult the proper procedure for G-scan2 disposal.

Chapter 2. Getting started with G-scan2

2.1. Specifications

2.2. Parts and Components

2.3. Details of Base unit

2.4. Power Supply to G-scan2

2.5. Rechargeable Battery

2.6. Connecting to the vehicle

2.7. Rear Pack Replacement

2.1. Specifications

G-scan2 Base Unit

General Specification			
Category	**Specifications**		
CPU	Triple CPU	Main control Board	ARM11@ 400MHz
		Communication Board	ARM9 @ 266MHz
		Measurement Board (Optional)	ARM9 @ 266MHz
System Memory	Main Control Board: NAND Flash 128MB and SD RAM 256MB Main Control Board: NAND Flash 32MB and SD RAM 8MB Main Control Board: NAND Flash 32MB and SD RAM 8MB		
External Memory	16GB SD Card		
LCD	7” TFT LCD (1024 X 600 pixel)		
Input Devices	Touch Screen Power, Enter and Esc keys 4 way directional keys , F1 ~ F6 function keys		
Indication Lamps	3 Color LED		
Sound	Buzzer and speaker		
Rechargeable Battery	Li-Ion Polymer 2100m Ah 1cell		
Operating voltage	7 ~ 35V DC (10~35V for charging)		
Housing Material	PC + ABS resin with rubber shrouds		
Dimension	230 X 146 X 72 mm (with VMI pack mounted)		
Weight	Approx. 1300g (with VMI pack mounted)		

Connectivity	
External COM port	1 X USB 2.0 standard (master) + 1 X mini USB (slave)
WiFi Module	On-board
Blue Tooth	On-board

AC / DC Power Adapter	
Input Power	100 ~ 240V AC
Frequency	50 / 60 Hz

VMI (Vehicle Measurement Interface)

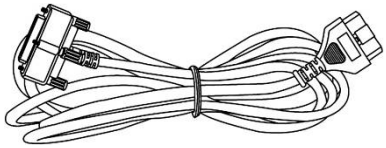
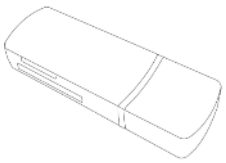
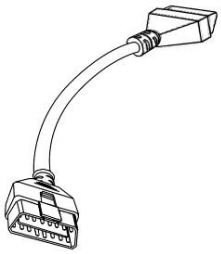
Oscilloscope		
Voltage Division	2 Channel Mode	±400mV, ±800mV, ±2V, ±4V, ±8V, ±20V, ±40V, ±80V, ±200V, ±400V
	4 Channel Mode	±4V, ±8V, ±20V, ±40V, ±80V, ±200V, ±400V
Vertical Resolution	10 bit	
Sampling Mode	Normal / Peak Mode	
AC/DC Coupling	Supported	
Time Division	2 Channel Mode	100 µs, 200 µs, 500 µs, 1 ms, 2 ms, 5 ms, 10 ms, 20 ms, 50 ms, 100 ms, 200 ms, 500 ms, 1s, 2s, 5s
	4 Channel Mode	200 µs, 400 µs, 1 ms, 2 ms, 4 ms, 10 ms, 20 ms, 40 ms, 100 ms, 200 ms, 400 ms, 1s, 2s, 4s

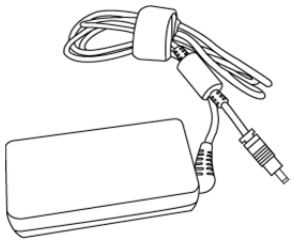
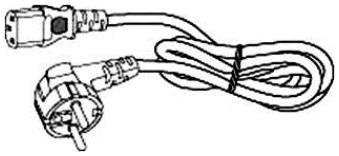
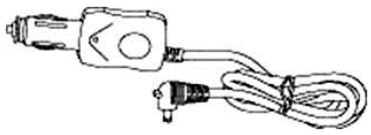
Digital Meter	
Voltage	± 400 mV, ± 4V, ± 40V, ± 400V / Auto Range
Resistance	1Ω ~ 10 MΩ / Auto Range
Frequency	1Hz ~ 10kHz / Threshold level : 2.5±0.5V
Duty Cycle	0.1% ~ 99.9% @ 1Hz ~ 100Hz
	1.0% ~ 99.0% @ 100Hz ~ 1kHz
	3.0% ~ 97.0% @ 1kHz ~ 3kHz
	5.0% ~ 95.0% @ 3kHz ~ 5kHz
	10.0% ~ 90.0% @ 5kHz ~ 10kHz
Pulse Width	10 µs ~ 1,000ms

Simulation		
Voltage Signal Output	0.0 ~ 5.0 V	
Frequency Signal Output	1Hz ~ 999Hz (50% duty)	
Actuator Control	Frequency Range	1Hz ~ 999Hz
	Duty Range	1% ~ 99% @ 1Hz ~ 99Hz
		10% ~ 90% @ 100Hz ~ 999Hz
	Pulse Width	Variable

2.2. Parts and Components

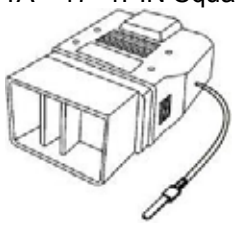
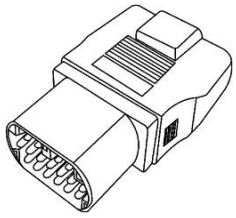
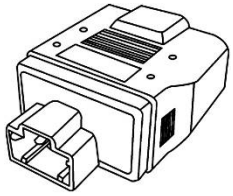
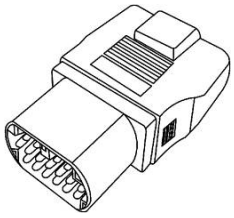
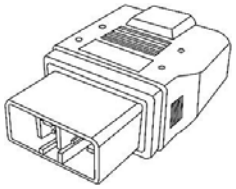
Basic Supplies

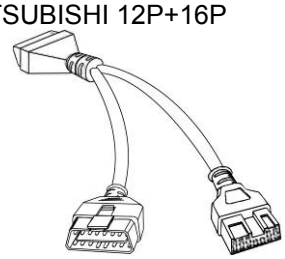
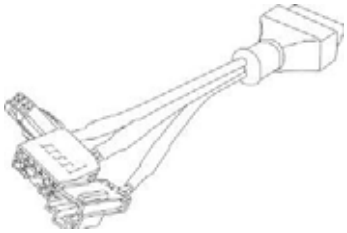
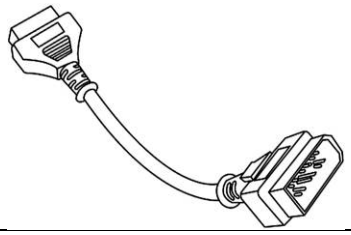
Part	Part Number	Description	Q'ty
	G1FDDMN029 (Blue) G1FDDMN020 (Black)	**Part Name: G-scan2 Base Unit** G-scan2 base unit with VMI module Includes the battery and SD Card	1
	A2MDT2SD16G	**Part Name: SD Card 16GB** Provided included in the base unit. A memory card that contains software and data for diagnostic functions.	1
	G1FZFCA001	**Part Name: Cable – DLC Main Cable** The main cabled used for connecting the G-scan2 base unit and the car's OBD2 connector.	1
	A2MDK1CCRP5	**Part Name: SD Card Reader** A USB card reader used for connecting the SD Card to the PC. (Specs can be changed without notice)	1
	G1CDDPA008	**Part Name: Self Test Adapter** A cable used for self test of G-scan2 base unit and the cable connection. Do not use this cable for vehicle diagnostic functions	1
	G1PZGDP001	**Part Name: PC Utility CD (S/W)** A CD that contains the G-scan2 PC utility installation program and soft copy of user's guide.	1

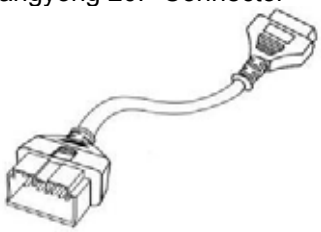
	G1FZDHA001	**Part Name: Carrying Hard Case** A portable and heavy duty hard case that contains G-scan2 base unit and parts.	1
	G1CDDPA013	**Part Name: AC/DC Adapter** AC to DC converter used for supply of AC power to the G-scan2 base unit.	1
	G1CDECA001 (Europe, Korea) G0PDDCN001 (Australia) G0PDDCN002 (UK, Malaysia) G1PDDCA002 (North America)	**Part Name: AC Power Cord** AC power cord used with the AC/DC adapter for supply of AC power to G-scan2 base unit Different type AC plugs may apply for different countries i.e. Korea, USA. Australia and UK. Spec: IEC 60320 C13	1
	G2SDDCA003	**Part Name: Cable – Battery** A power supply cable used together with the Cigarette Lighter Cable when supplying power from the car's battery.	1
	G1PDDCA002	**Part Name: Cable-Cigarette Lighter** A power supply cable used when supplying power from the car's cigarette lighter socket.	1
	G1FZTZM001	**Quick Manual** A single piece laminated paper manual for quick guidance for G-scan2 usage.	

Non-standard OBD Adapters Asian Vehicles

Parts included in the Asian and Full Kit (Not included in Standard Kit)

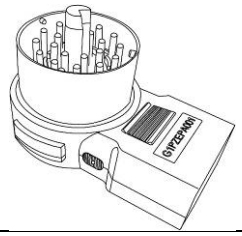
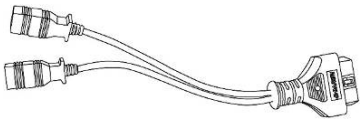
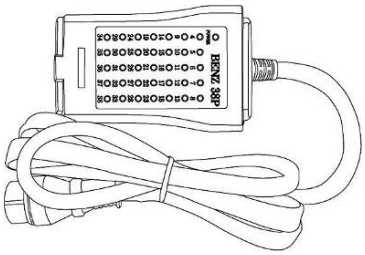
Part	Part Number	Description	Q'ty
TOYOTA 17+1PIN Square 	G1PZDPA001	Used for communication with old Toyota and Lexus cars with 17+1 pin "Square (rectangular)" type diagnostic connector in the engine compartment.	1
TOYOTA 17P Round 	G1PZFPA002	Used for communication with old Toyota and Lexus cars with the 17-pin "Round (Semi-circular)" type diagnostic connector. Same appearance as the Mazda 17P adapter, make sure to check the name engraved on the surface.	1
HONDA/ACCURA 3P 	G1PZFPA003	Used for communication with old Honda and Acura cars with the 3-pin or 5-pin diagnostic connector.	1
MAZDA 17P 	G1PZFPA004	Used for communication with old Mazda models. Same appearance as the Toyota 17P R adapter, make sure to check the name engraved on the surface.	1
SUBARU 9P 	G1PZFPA005	Used for communication with old Subaru cars with the 9-pin diagnostic connector. (Can be excluded from the Asian kit due to regional preferences)	1

MITSUBISHI 12P+16P 	G1PZDPA002	Used for communication with old Mitsubishi or Hyundai cars with the 12-pin single or 12+16pin dual diagnostic connector.	1
Kia 20P-A type Connector	G1FDDPA001	Used for communication with old Kia cars with 20 pin diagnostic connector in the engine compartment. Generally used for '99 ~ '02 MY cars.	1
Kia 20P-B type Connector	G1FDDPA002	Used for communication with old Kia cars with 20 pin diagnostic connector in the engine compartment. Generally used for '03 ~ '05 MY cars.	1
Hyundai & Kia Keyless Connector 	G1CDDPA007	Used for some old Hyundai and Kia models that require special connector for keyless entry remote control coding	1
NISSAN 14P 	G1PZFPA007	Used for communication with old Nissan or Infiniti cars with the 14-pin diagnostic connector.	1
Ssangyong 14P Connector	G2WDDCN006	Used for communication with old Ssangyong cars with 14 pin circular diagnostic connector in the engine compartment (Can be excluded from the Asian kit due to regional preferences)	1

Ssangyong 20P Connector 	G2WDDCN007	Used for communication with old Ssangyong cars with 20 pin square diagnostic connector in the engine compartment (Can be excluded from the Asian kit due to regional preferences)	1
Daewoo 12P Connector	G2WDDCN008	Used for communication with old Daewoo cars with 12 pin diagnostic connector (Can be excluded from the Asian kit due to regional preferences)	1

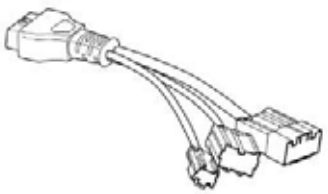
Optional European Car OBD Adapters

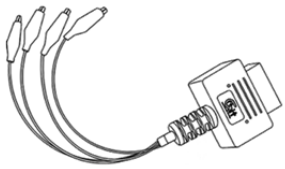
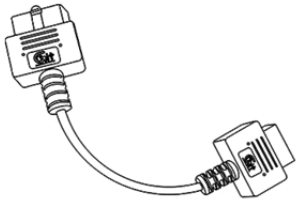
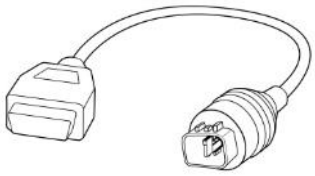
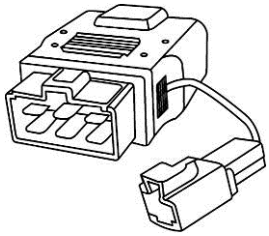
Parts included in the Full Kit (Not included in Standard and Asian Kit)

BMW 20P 	G1PZEPA001	Used for communication with old BMW cars with the 20-pin circular diagnostic connector.	1
AUDI / VW 4P 	G1PZEPA002	Used for communication with old Volkswagen, Audi, Seat or Skoda cars with the 2 X 2 pin diagnostic connector.	1
BENZ 38P 	G1PZEPA012	Used for communication with old Mercedes Benz cars with the 38-pin circular diagnostic connector in the engine compartment. (Can be excluded from the full kit and replaced with the other optional adapters due to regional preferences)	1

Optional Diagnostic Adapters for Commercial Vehicles and Rare Models

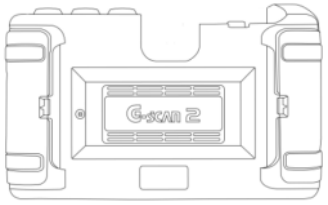
Parts available as optional supply

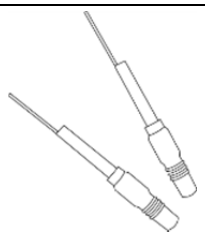
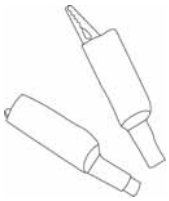
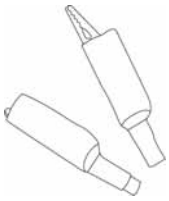
J1939 9-P adapter	G1PZDPA005	Used for generic communication with SAE J1939 compatible commercial vehicles	1
Isuzu 20-10-3P adapter 	G1PZDPA006	Used for communication with old type Isuzu commercial vehicles	1

Universal Adapter 	G2WDDCN010	Used for communication with the vehicles that are fitted with non-standard OBD adapters that G-scan's standard kit adapters are not compatible	1
Hyundai Commercial 16-pin 	G2SDDCA029	Used for most Hyundai and Kia commercial vehicles. Similar to standard OBD2 connector, but the internal wirings are different. Colored light grey for recognition	1
Hyundai Commercial 4-P CNG 	G1GDDPA001	4-pin circular connector used specifically for Hyundai CNG (Compressed Natural Gas) buses	1
Kia 6P Connector 	G1CDDPA005	Used for communication with old Kia cars with 6 pin diagnostic connector in the engine compartment.	1

Basic components for Measurement Functions

Parts supplied with the G-scan2 for measurement functions

	G1FDDMN006	VMI Pack Detachable rear module that enables G-scan2's oscilloscope, meter and simulation functions. Part of G-scan2 base unit, not sold separately. Includes rechargeable battery.	1
	G1FDDCA002	Ground Cable Used for independent grounding of the VMI circuit for stable and accurate measurement	1
	G1MTKCA002	Channel A Probe (Red) Connected to the red Channel A port of the VMI, used for acquiring electric signal from the wires or terminals.	1
	G1MTKCA003	Channel B Probe (Yellow) Connected to the yellow Channel B port of the VMI, used for acquiring electric signal from the wires or terminals	1
	G1SDDCN005	Scope Pins (Red)	2
	G1SDDCN005 (Part number shared)	Scope Pins (Black)	2

	G1SDDCN005 (Part number shared)	Spring Pin	2
	G1SDDCN005 (Part number shared)	Scope Clip (Red)	2
	G1SDDCN005 (Part number shared)	Scope Clip (Black)	2

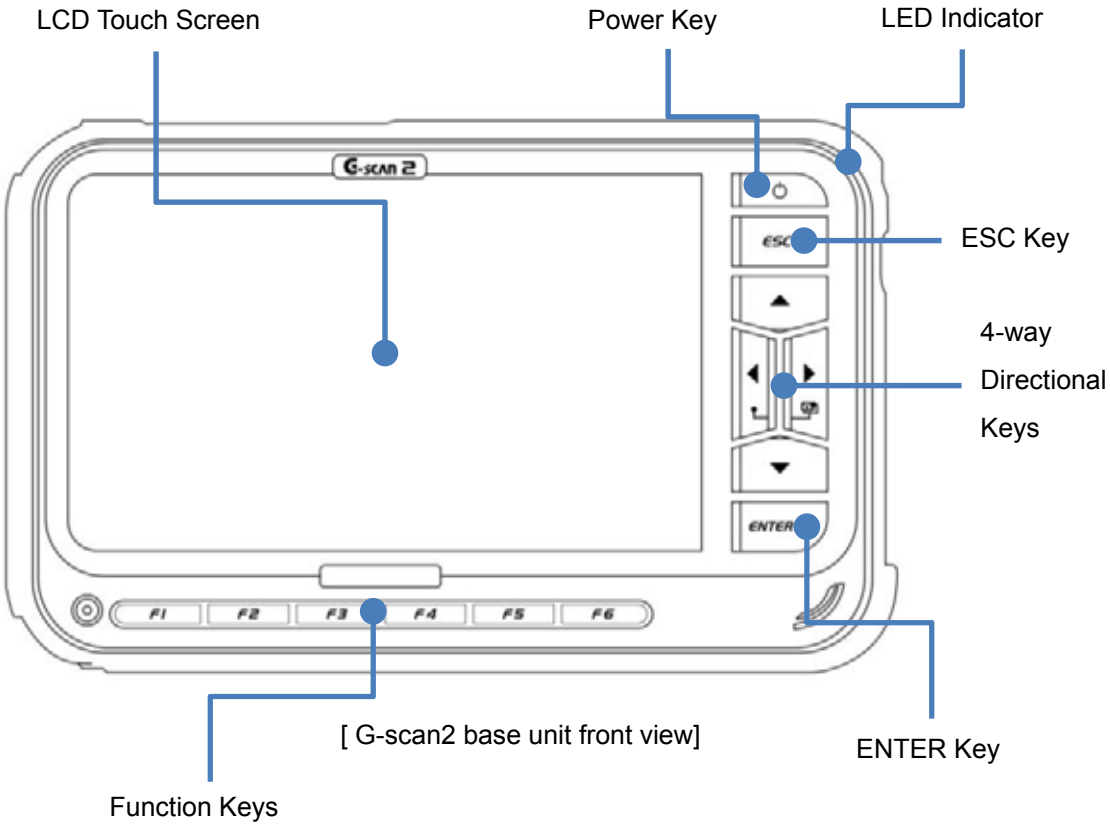
Optional components for Measurement Functions

Parts available as optional supplies

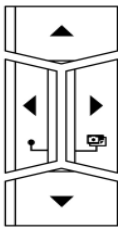
	G1GDKCA003	Current Clamp, small current Used for measurement of small current of up to 20A	
	G1GDKCA004	Current Clamp, large current Used for measurement of large current of up to 100A or 1000A (switchable)	
	G1GDKCA006	Pressure Sensor Used for measurement of pressure	

2.3. Details of the base unit

Touch Screen and Input Buttons



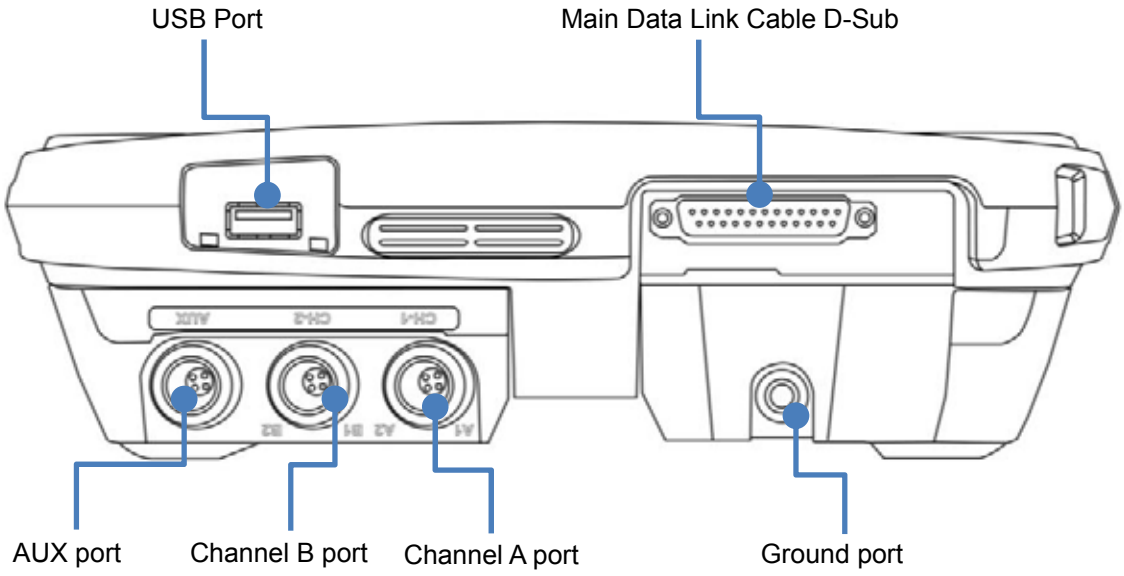
[G-scan2 base unit front view]

Part Name	Function
Touch Screen	Menu items, graphic buttons or icons are selected by directly touching the screen
	Different functions are assigned to the buttons, and the selected function runs when pressed
	Turns G-scan2 power On /Off 1) ON: Keep pressing the button for 0.5 seconds or more 2) OFF: Hold down the button for 1 ~ 2 seconds 3) A short press of the button, for less than 0.5 seconds while G-scan2 is turned on, puts G-scan2 into the “Standby Mode”
	Returns to the previous step or aborts the currently running function
	Moves the cursor up, down, left or right to select the item or function in the menu Pressing the Left and Right keys at the same time works as the hot key for the screen capture.
	Confirms the selection or executes the selected function
	Indicates the power charging status of G-scan2. RED: Charging, Green: Fully Charged, Blue: Stand-by Mode

LED Indicator Signal

Power Source	When charging	When fully charged
AC/DC adapter	Red LED ON	Green LED ON
DLC cable	Red LED ON	Green LED ON
Internal Battery	Red LED ON	Green LED ON

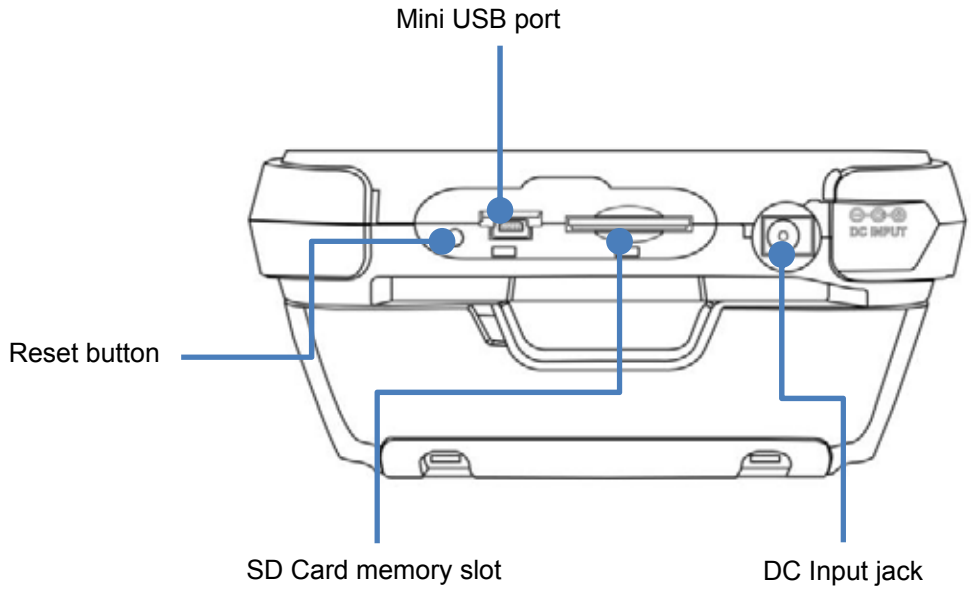
G-scan2 Hardware Configuration – Top



[G-scan2 base unit top view]

Part Name	Description
DLC D-sub	Main Data Link Cable is connected
USB port	Standard USB cable is connected
Ground port (Green)	Ground cable is connected for the measurement functions
Channel A (CH-A) port (Red)	CH-A oscilloscope probe cable is connected for the measurement functions
Channel B (CH-B) port (Yellow)	CH-B oscilloscope probe cable or the pressure sensor is connected for the measurement functions
AUX port (Blue)	Current sensor, Small or large, is connected for the measurement functions

G-scan2 Hardware Configuration – Side



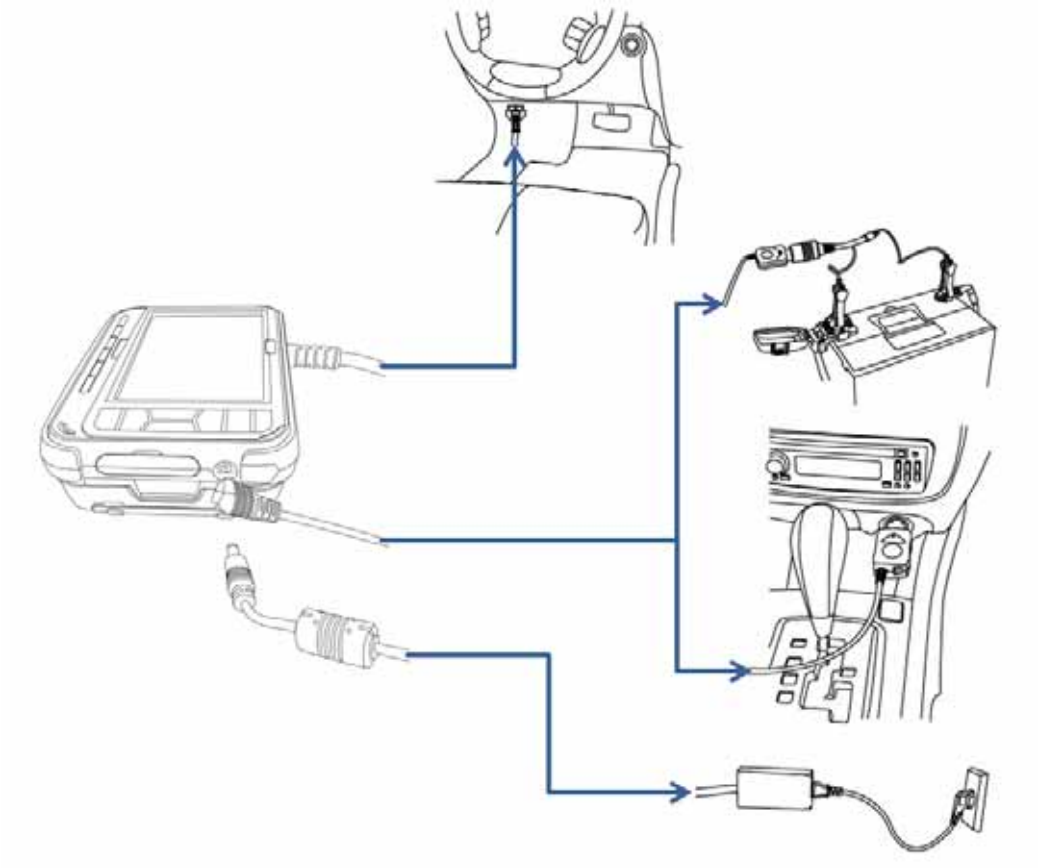
[G-scan2 base unit side view]

Part name	Description
Reset button	Resets G-scan2 by force in case the system is unable to shut down normally due to the software failure caused by O/S defect or others
Mini USB port	Mini-USB cable is connected
SD Card memory slot	Accommodates the SD Card
DC input jack	AC/DC Adapter or Cigarette Lighter Cable is connected for the supply of external power to G-scan2

2.4. Power Supply to G-scan2

Power supply to G-scan2 is available from 4 different sources.

- from diagnostic connector
- from cigarette lighter socket
- from vehicle battery
- from AC outlet (through AC/DC adapter)



[Delivery of power to G-scan2]

from the diagnostic adapter

1. Extend the G-scan2 main cable to the vehicle side diagnostic socket. Attach the paring OBD non-standard connector if necessary.
2. Turn the ignition key to ACC or ON position, and power is supplied to G-scan2.
   The power is supplied through the diagnostic socket even when the IG key is turned OFF. However, please note that the IG key must be turned ON for diagnostic communication.
3. By the industrial standard, all OBD-2 / EOMB compliant vehicles are designed to supply power through the diagnostic adapter.
4. The vehicle side DLC socket is recommended to be placed within 1 meter from the driver's seat. It is generally found under the dashboard. However, be reminded that there are exceptions.

from the cigarette lighter socket

1. Connect the cigarette lighter power cable to G-scan2's DC input jack.
2. Extend the cable and insert the connector to the vehicle side cigarette lighter socket
3. Turn the ignition key to ACC or ON position, and power is supplied to G-scan.
   In case of drawing power from the cigarette lighter socket, the power is lost when cranking the engine causing G-scan2 to turn off if the internal battery is discharged or not installed. It is recommended to use the other power source if rechargeable battery is not charged or the battery pack is not installed to G-scan2

from the vehicle battery

1. Connect the cigarette lighter power cable to G-scan2's DC input jack.
2. Attach the battery cable with the alligator clips to the end of the cigarette lighter power cable.
3. Beware of the battery polarity, and extend the red clip to the (+) terminal of the vehicle battery and the black one to the (-) terminal.
4. Turn the ignition key to ACC or ON position, and power is supplied to G-scan2.

Caution

Never connect the battery cable clips to the reversed polarity terminals.
It may cause serious damage to G-scan2.

from AC outlet

1. Connect the DC jack of the AC/DC converter to G-scan2's DC input jack.
2. Extend the AC plug of the AC/DC converter to the AC outlet.
3. Power is supplied to G-scan2

Caution

Make sure to use the AC/DC adapter that is supplied with G-scan2.

Damage caused from use of unapproved AC/DC adapter is not subject to warranty service.

Turning G-scan2 ON

Hold down the POWER button for about 0.5 seconds to turn the G-scan2 on.

The LED indicator illuminates in blue which goes off shortly after, then the G-scan2 booting sequence is initiated. The booting sequence is followed by the main menu display.

Turning G-scan2 OFF

Hold down the POWER button for about 2 seconds to turn the G-scan2 off.

"The system is shutting down" message appears on the screen, the LED indicator shortly illuminates in blue, then the G-scan2 is powered off completely.

Switching G-scan2 to Standby mode

A stand-by mode query pops up when the POWER button is pressed shortly as shown below:

G-scan2
04
Standby Mode
Power OFF
If you want to go into standby mode or to turn off G-scan2,
please select the corresponding button

Wait until the timer counts down to zero, then the G-scan2 switches to "Standby mode". In Standby mode, G-scan2 hibernates until any key is pressed. Upon any key stroke or a screen touch, it resumes normal operation instantly without going through the boot-up sequence.

Select "Power OFF" to turn the G-scan2 completely.

In case of unintended stroke of POWER button or pressed by accident, select "Cancel".

2.5. Rechargeable Battery

G-scan2 is fitted with the Li-Ion rechargeable battery pack as the basic supply, and it enables the device to run normally when the external power supply is lost. However, drawing power from the car is always recommended for diagnostic communication stability.

1. Connect DC jack of the AC/DC adapter to G-scan2's DC input jack.
2. Extend the adapter plug of the AC/DC adapter to the AC outlet.
3. LED indicator illuminates in red when charging the battery. When fully charged, the LED turns to green.

Charging	**Fully Charged**
Red LED On	Green LED On

Warning

Frequently check the battery indicator icon on the corner of the screen when operating G-scan2 on its battery without an external power source.

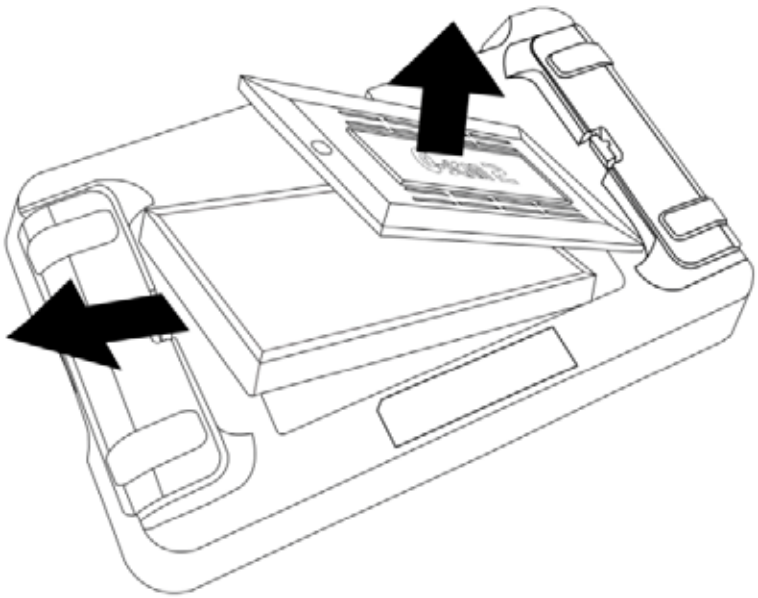
Recharge the battery immediately by supplying external power when the battery status appears low; otherwise G-scan2 will turn off automatically.

Rechargeable Battery Replacement

A rechargeable battery is an expendable supply of which performance deteriorates over the repeated recharging cycles, and the replacement of the battery is recommended when the lowered charging performance is experienced.

Open the rear battery cover and lift the battery to remove.

Insert the new battery in place and close the cover.

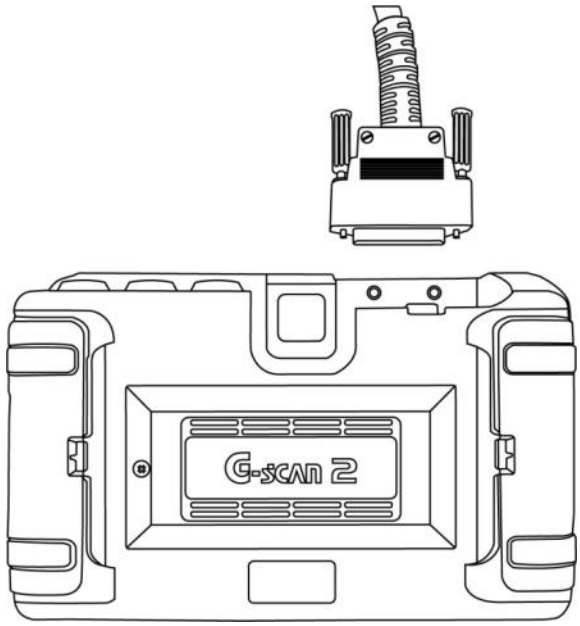


[Rechargeable Battery Replacement]

2.6. Connecting to the vehicle

Connecting the main DLC cable to the base unit

Connect the DLC main cable to the G-scan2 D-sub connector, and secure the connection by fastening the 2 main screws as well as the 2 vertical screws. Do not apply excessive power when fastening the screws.



Warning

Do not hold the G-scan2 base unit by the main cable when carrying the product. Make sure to hold the base unit or the hand strap

Connecting to the Vehicle

Extend the DLC main cable connected to the G-scan2 to the vehicle side DLC socket.

Different types of diagnostic adapter may be used for the old models or the commercial vehicles. If the vehicle is not OBD2 / EOBD compliant, identify and attach the matching adapter, then connect it to the vehicle side socket.

2.7. Rear Pack Replacement

G-scan2 rear pack replacement

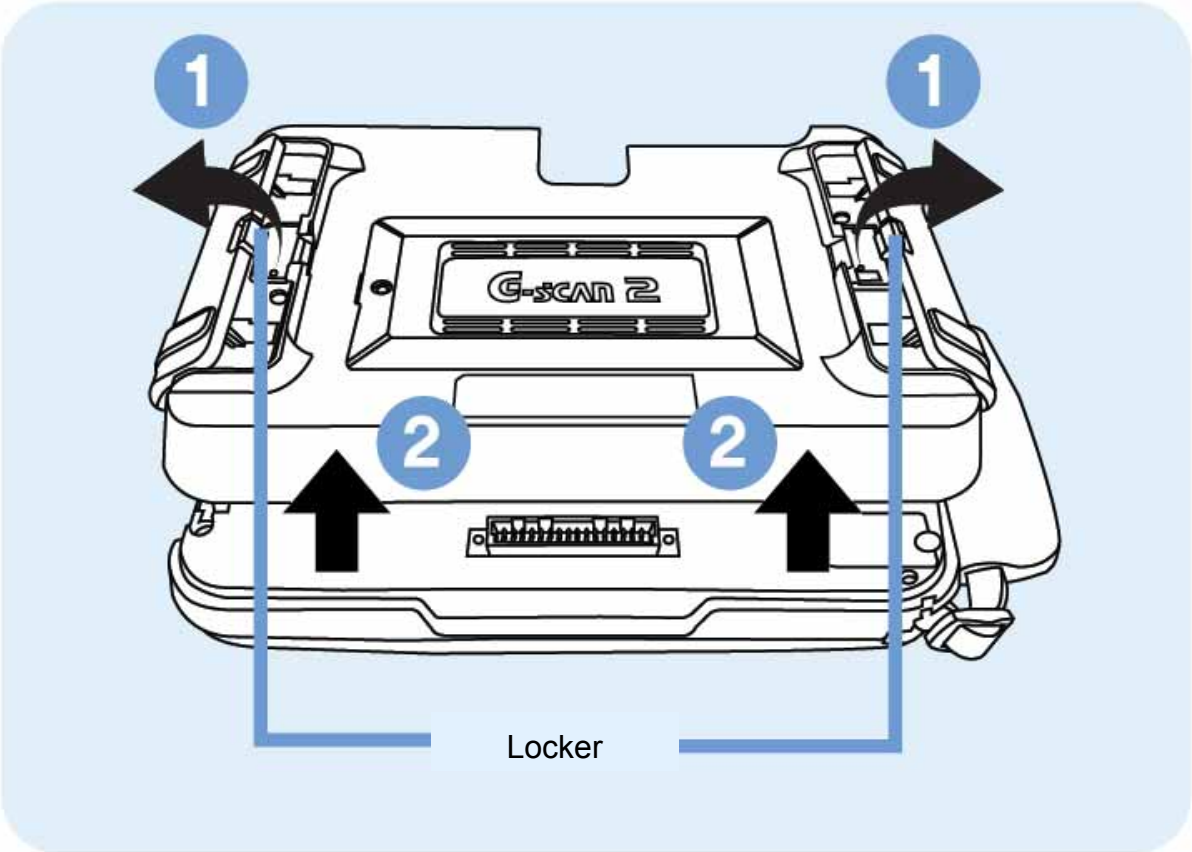
G-scan2 is supplied with the VMI rear pack which offers the measurement capability including oscilloscope, digital multi-meter and simulation functions.

1. Detaching

   Unlock the lockers on both sides by pressing them sideways

   Swing open the locker hinges, then the rear pack is released

   Detach the rear pack from the base unit by lifting gently



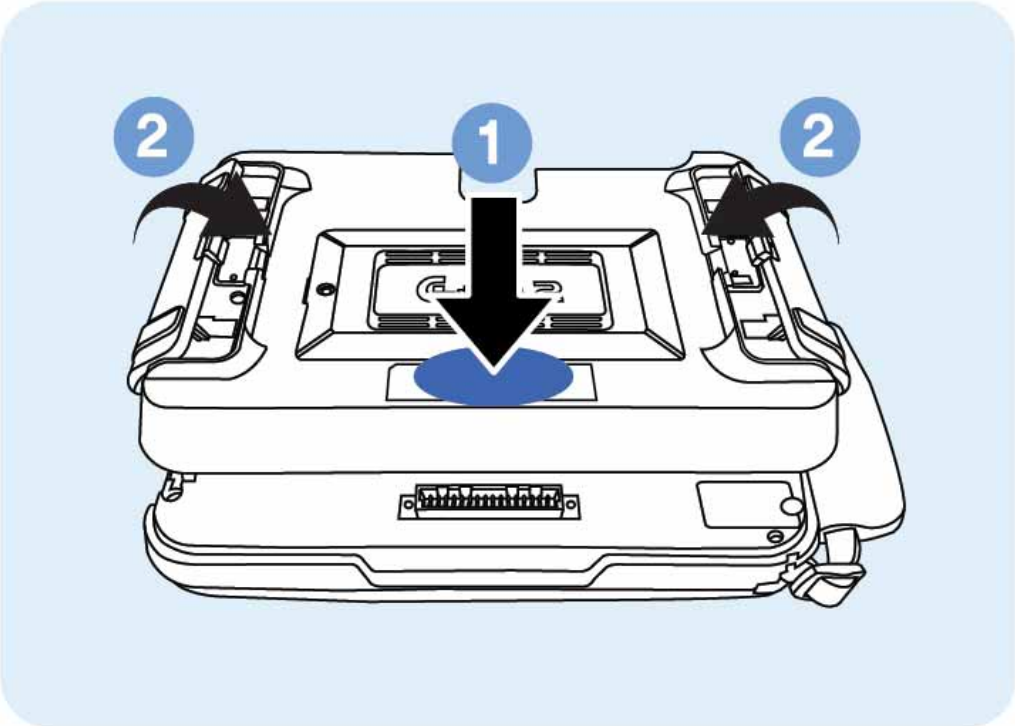
[Rear pack removal]

2. Mounting

   Put the rear pack well aligned in place

   Lock the rear pack to the base unit by gently pressing down the center part

   Swing close the locking hinges on both sides.



[Rear pack mounting]

Chapter 3 G-scan2 Basic Operations

3.1. Main Menu and System Tools

3.2. Recorded Data

3.3. OBD-II

3.4. Vehicle Diagnosis

3.5. Measurement

3.6. Favorite

3.7. G-scan2 System Lock

3.1. Main Menu and System Tools

The main menu as shown below appears when G-scan 2 is turned on.
Please refer to the information about the main menu items and functions provided in this chapter for further usage of G-scan2 product.

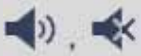
Main menu

The main menu of G-scan2 is consisted of 4 sections (header, additional functions, major functions and bottom).

[4 sections of main menu]

Main menu - Header

The header carries different type of information and indicators according to the selected functions.

Icon	Name	Description
	Battery Status	Indicates the battery charging status * A rechargeable battery is an expendable supply of which performance deteriorates over repeated recharging cycles. : Charging : Fully charged, : Battery balance (while running on the battery power).
	Volume	Level of speaker volume (loudness). Switching off the speaker is possible from the configuration menu.
	WiFi Status	Indicates the WiFi (WLAN) connection status
12:00 AM	time	Indicates the system time
13 Jul 2013	Date	Indicates the system date
	Screen Capture	Captures the current screen and saves to the SD card memory.
	Previous	Moves back to the previous step
	Home	Jumps to the Main Menu

Main Functions

[Main Functions]

Icon	Title	Description
	Recorded Data	Retrieves data files recorded in the SD card, including flight record data, saved oscilloscope waveforms and screen captures
	OBD-II	Performs Generic OBD2/EOBD diagnostic functions for the ISO9141-2, ISO14230 (KWP2000) and ISO15765-4 (CAN-Bus) compliant vehicles.
	Diagnosis	Runs manufacturer specific diagnostic functions including DTC Analysis, Data Analysis, Actuation Test, ECU Info and various Special Functions for each car manufacturer.
	Measurement	Executes the vehicle measurement features including oscilloscope, digital multi-meter and simulation functions.
	Favorite	Opens the favorite functions folder where the frequently used functions are listed and organized by the user. The listed functions can be revisited simply without having to navigate the multiple menu layers each time.

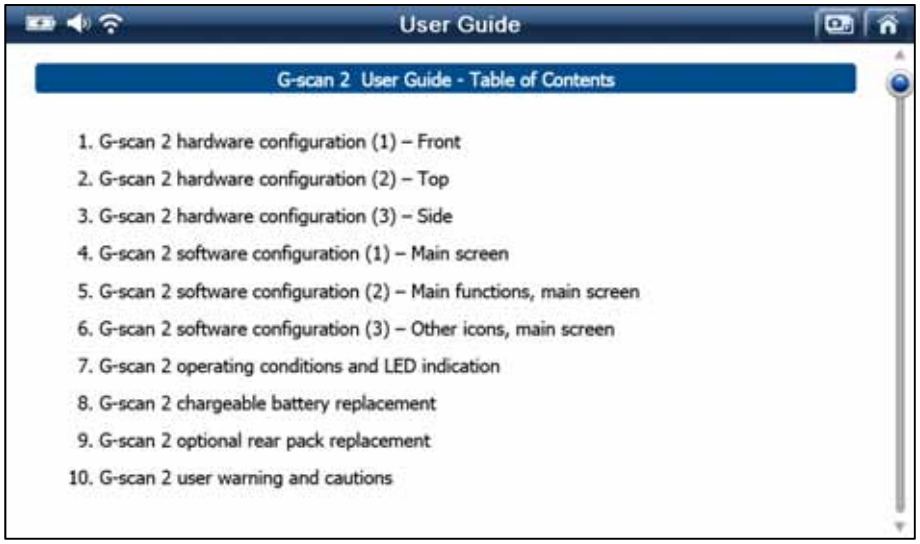
Additional Function Section

Includes the icons of the additional functions that can be directly selected from the main menu, including Quick User Guide, Configuration, and Utility.

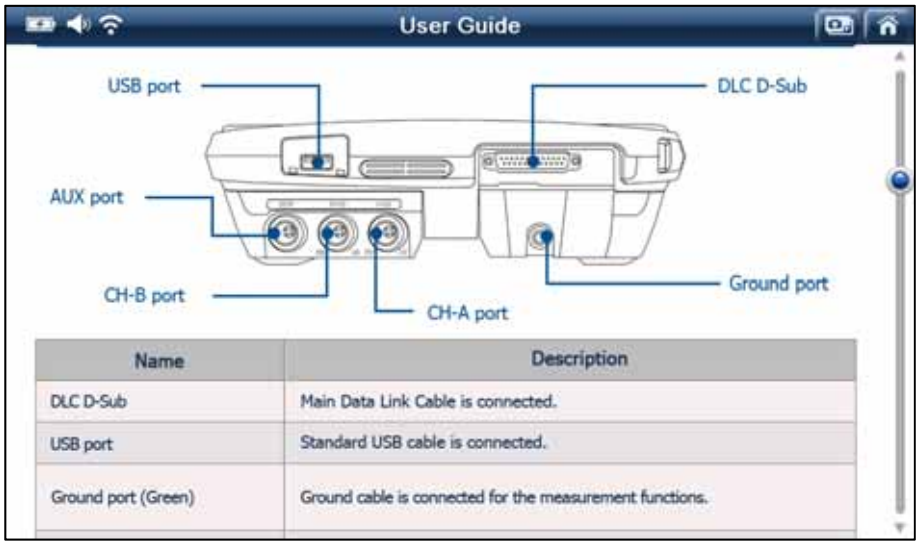
Icon	Name	Description
	Quick User Guide	Opens the Quick User Guide, where the simplified user's manual can be viewed. Refer to the user's manual included in the PC Utility program for more details.
	Configuration	Opens the configuration menu where software version information check, date and time set, language selection and various user settings can be reviewed and changed.
	Utility	Calls the various utility programs such as "Vehicle Communication Line Check", "Unit Converter", "Calculator", "Special Function Calculator", etc.

1. Quick User Guide

Select "Quick User Guide" from the G-scan 2 main menu among the Additional Functions icons to view the simplified user's manual for quick reference.


User Guide
G-scan 2 User Guide - Table of Contents
1. G-scan 2 hardware configuration (1) – Front
2. G-scan 2 hardware configuration (2) – Top
3. G-scan 2 hardware configuration (3) – Side
4. G-scan 2 software configuration (1) – Main screen
5. G-scan 2 software configuration (2) – Main functions, main screen
6. G-scan 2 software configuration (3) – Other icons, main screen
7. G-scan 2 operating conditions and LED indication
8. G-scan 2 chargeable battery replacement
9. G-scan 2 optional rear pack replacement
10. G-scan 2 user warning and cautions

[Quick User Guide – Index]



[Quick User Guide – Main Body]

2. Configuration

Select the “Configuration” among the Additional Functions icons to check the software versions, set up the WiFi connection, perform the self-test, keypad test or touch screen calibration, or change the various user settings such as stand-by mode, brightness, sound, user information.

2-1. Software version

The G-scan2 serial number and the version numbers of operating system and the individual diagnostic programs can be checked.

[G-scan 2 Configuration – Software Version]

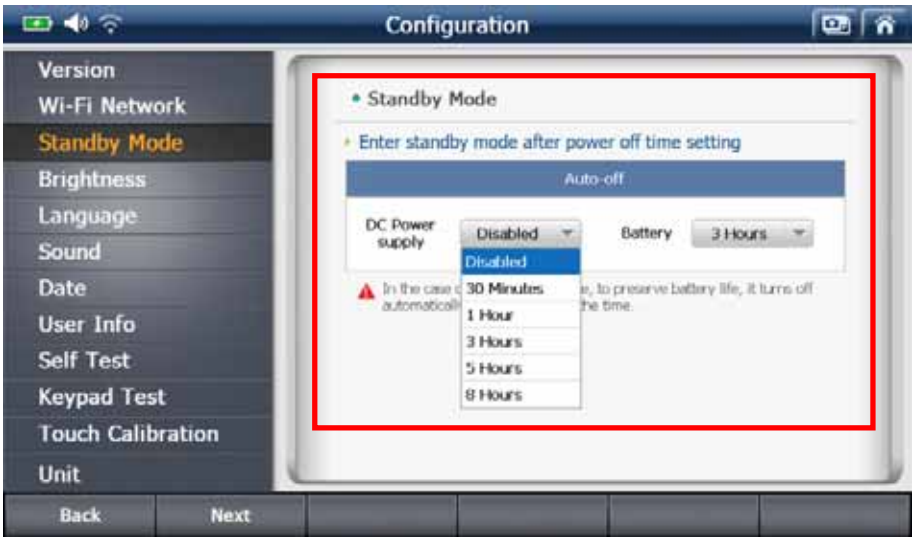
2-2. Wireless Network

Wireless network status can be checked. The Wireless network setup can be carried out from the PC Utility's Configuration menu.

[G-scan 2 Configuration - Wireless Network Status]

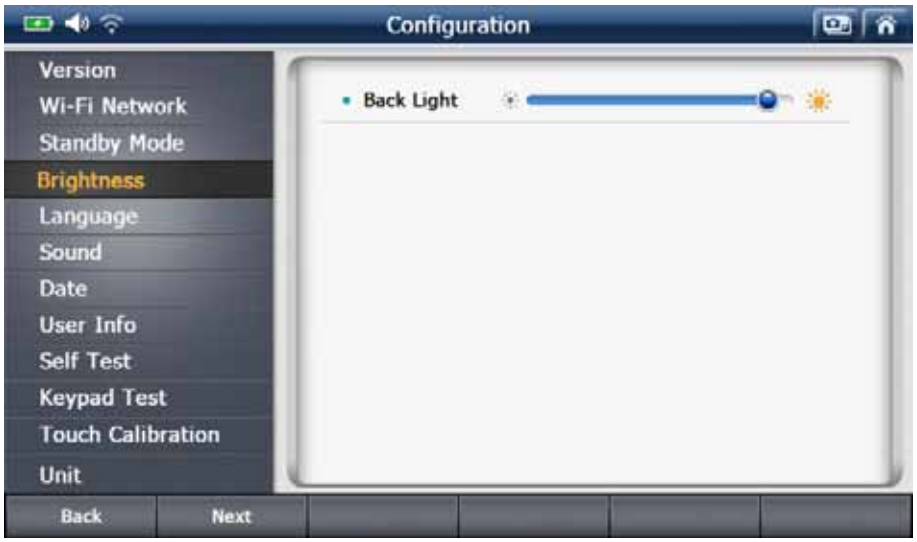
2-3. Stand-by mode setting

Automatic power off while G-scan2 is hibernating in stand-by mode can be selected from the drop down menu either when powered by the DC Power input or the internal battery.



2-4. LCD Brightness Control

Brightness of the LCD Backlight can be adjusted



2-5. Language

Select the preferred language among the supported languages (if available). The languages are supported in different set by the regions. Generally English is the primary language with the different local languages supported as the secondary.

2-6. Sound

The loudness of the sound that G-scan2 internal speaker can be adjusted.

The speaker turns to mute when adjusted to the lowest level.

2-7. Date

The date and time that are applied while using G-scan2 can be set and adjusted.

2-8. User Information

G-scan2 user information can be reviewed.

. The user information can be inputted or revised from the PC Utility's Configuration menu.

2-9. Self-test

In case the G-scan2 fails in performing the diagnostic functions properly, Self Test function helps the user identify whether the communication problem is caused by the defective DLC main cable or the malfunction of the base unit. (This function does not tell which part of G-scan2 is defective)

Self-test is designed based on the Loop Back system, with which G-scan2 sends off signals from the base unit through the DLC cable, and the self-test adapter returns the signal back to the base unit. By sending signals from different channels and lines, and verifying the correctness of every signal echoed from this looped connection in each case, it becomes identifiable where the communication failure originated.

Caution

- Loop back test is not supported in some vehicles with High Speed CAN, Low Speed CAN and SAE J1708 communication systems.
- Self-test can be used with OBD-II / EOBD compliant cars only. Cannot be used with OBD1 generation cars with non-standard adapters.

The Self-test is consisted of 2 steps: STEP-A and STEP-B.

Please observe and follow the instructions given on the screen during the test.

The Self-test Adapter is used for the both steps.

- Step-A : Checks the internal communication control circuit of G-scan2 base unit
- Step-B : Checks the signal delivery circuit of the DLC main cable

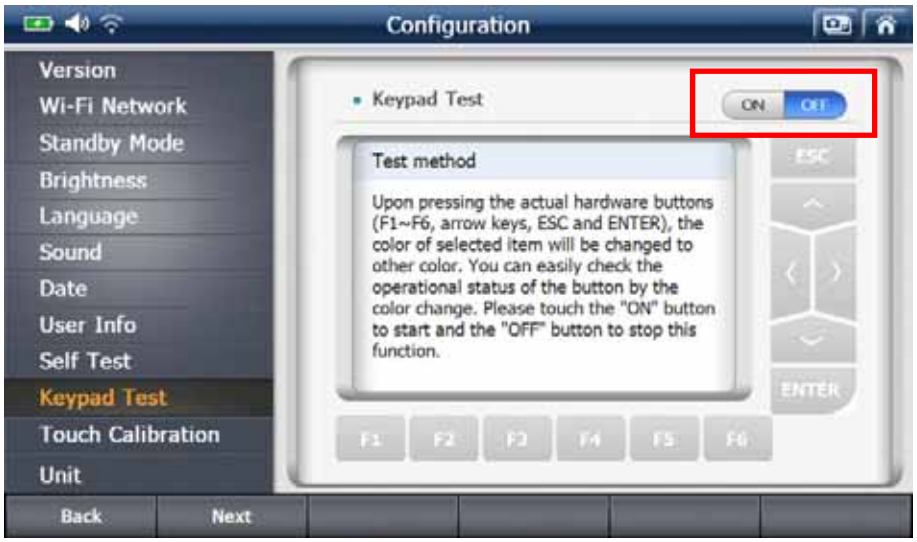
Caution

Please make sure to connect the Self-Test Adapter to the vehicle's diagnostic connector before starting the Self-Test process. The Self-adapter is a dedicated adapter used only for the self-testing purpose. Never use the Self-Test adapter for normal vehicle diagnosis, or it may cause serious damage to the vehicle and the G-scan2.

2-10. Keypad Test

Individual hard keys can be tested by observing the response of G-scan2 to a stroke.

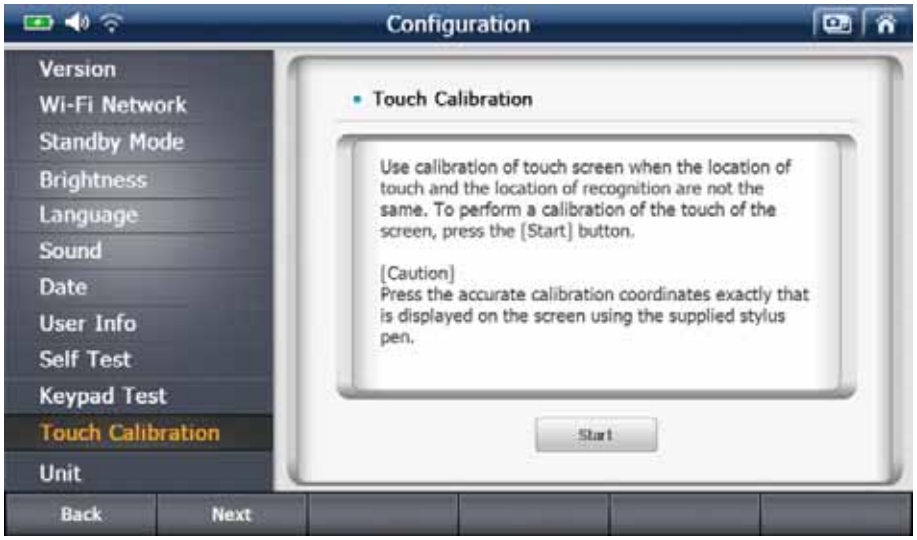
Switch the ON/OFF selector on the screen to “ON” to initiate the Keypad Test and refer to the Test Method for further process.



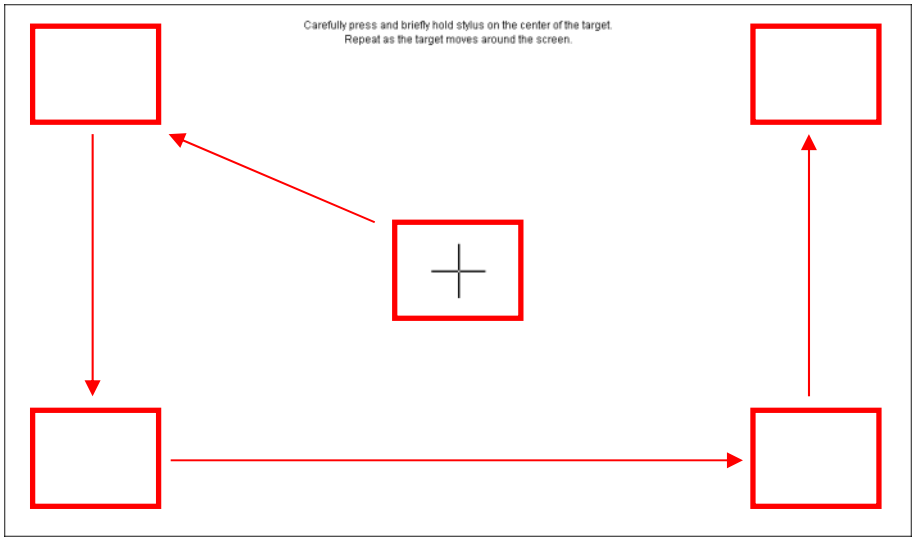
2-11. Touch Screen Calibration

G-scan2 may activate unwanted menu or item if the touch screen is not calibrated properly. The touch screen needs recalibration if the coordination of the actual position of the touched point is not recognized by the G-scan2 correctly.

A. Select “Touch Calibration” from the Configuration menu and select “Start”



B. Touch the center of the crosshair one after another on the screen as shown below.



C. Touch any position on the screen to complete the process if you see the “Calibration Completed” message as shown below. If you want to cancel the calibration, wait for 30 seconds until the timer counts down to zero.

New calibration settings have been measured.
Tap the screen to register saved data.
Wait for 30 seconds to cancel saved data and keep the current setting.

2-12. Unit

G-scan2 shows the parameter values and the measuring units just as the vehicle's Electronic Control Unit is programmed. However, it the different measuring units are preferred, the units can be selected among the given variations as preferred.

[Default measuring units as the vehicle's ECU is programmed]

3. Utility

G-scan2 offers a variety of utility functions for user's convenience.

[Utility Functions]

3-1. Communication Line Inspection

The electronic control systems fitted in the cars are designed to comply with the specific communication protocols, and the electronic control units communicate with the G-scan2 based on the protocol as they are designed through the diagnostic adapter, mostly through the OBD2 socket.

This function helps the user figure out whether the vehicle's electronic control units communicate with the other control units properly or not by indicating the status of the communication signal by illuminating ON-OFF lamps by sensing the change of the voltage level of the communication signal pins of the diagnostic socket.

5 types of communication protocols including High Speed CAN-bus, Middle Speed CAN-bus, Low Speed Can-bus, Single CAN-bus and SAE J1850 (PWM) are supported by this test function.

The same procedure is applied for all the protocols. Therefore refer to the following example based on testing the High-speed CAN-Bus system, and consider the same procedure when testing the other communication protocols.

A. Check the 'Notice' pop-up and select "OK" to continue.
As instructed, make sure to turn the IG key to ON position.

Caution

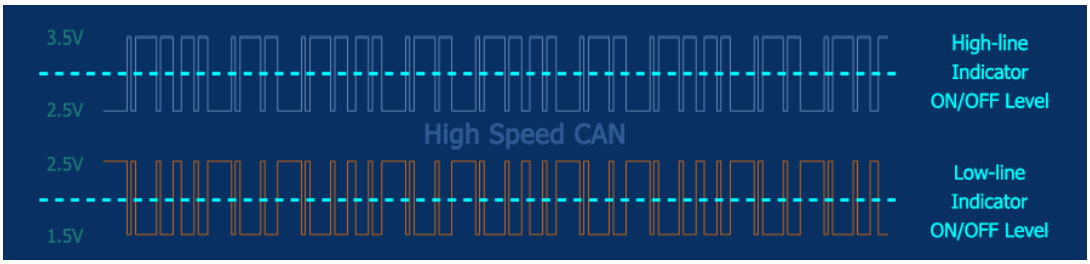
This function works based on the standard communication line assignment. However, sometimes the communication lines may be assigned to the different pins of OBD2/EBOD adapter for different cars according to the non-standard design by the car manufacturers.

Please refer to the circuit diagram of the test vehicle and check the correct communication lines if the function fails due to no signal input. If the communication lines are found assigned

to the different pins, please select “Configuration” button in the bottom right, and change the settings accordingly.

B. Select “OK”, then the OBD2 connector pin numbers that the signals are being transmitted are indicated, and “Indicator lamps” illuminate in turn.

The illuminating “Indicator lamp” indicates that the change of voltage is being sensed from the communication lines as illustrated below.



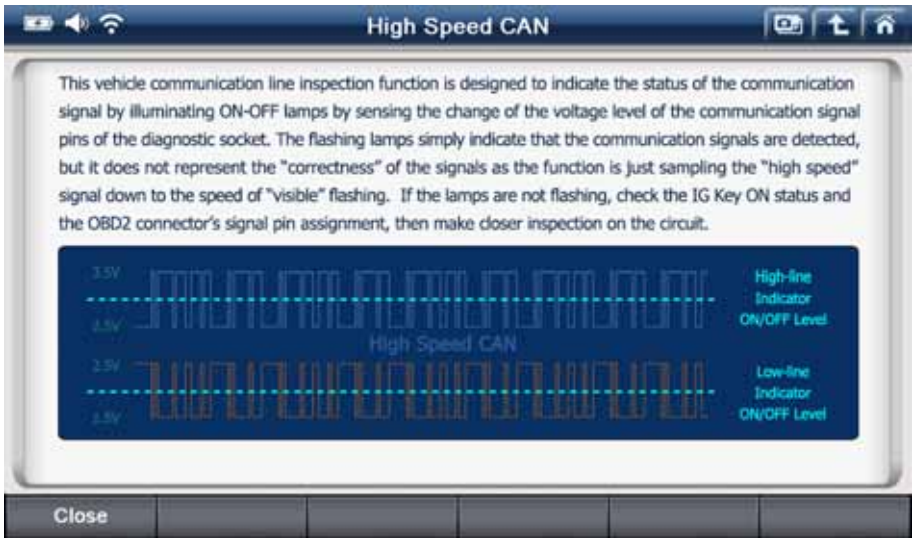
If the lamps are not flashing, check the IG Key ON status and the OBD2 connector’s signal pin assignment, then make closer inspection on the circuit.

This function offers ability to test the communication of the vehicle’s control system indirectly. Please mind that the result of this function may differ from the direct reading from the communication lines, because the function is not measuring the voltage from the communication lines, but indirectly senses the voltage fluctuations through the OBD2 socket.

Also, the flashing lamps simply indicate that the communication signals are detected, and it does not represent the “correctness” of the signals as the function is just sampling the “high speed” signal down to the speed of “visible” flashing.

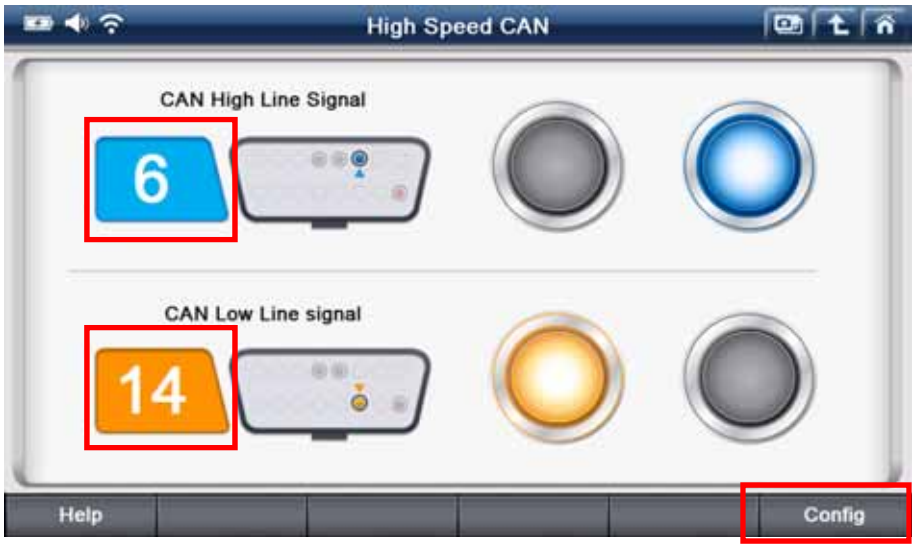
Select “Tips” and the additional information about the function follows as shown below.

[Vehicle Communication Line Inspection – Tips]

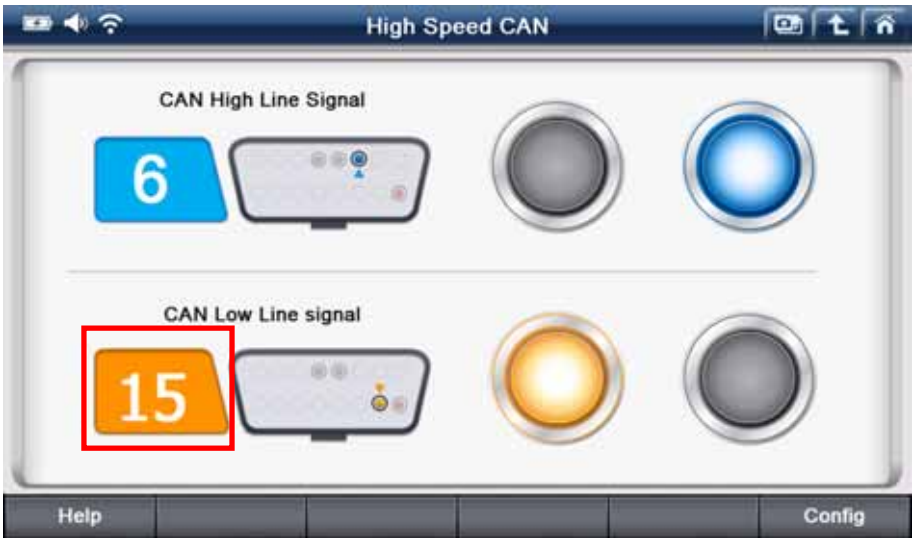

High Speed CAN
This vehicle communication line inspection function is designed to indicate the status of the communication signal by illuminating ON-OFF lamps by sensing the change of the voltage level of the communication signal pins of the diagnostic socket. The flashing lamps simply indicate that the communication signals are detected, but it does not represent the "correctness" of the signals as the function is just sampling the "high speed" signal down to the speed of "visible" flashing. If the lamps are not flashing, check the IG Key ON status and the OBD2 connector's signal pin assignment, then make closer inspection on the circuit.
High-line Indicator ON/OFF Level
High Speed CAN
Low-line Indicator ON/OFF Level
Close

[Hi-Speed CAN-Bus Inspection Tips]

C. According to the Hi-Speed CAN-Bus standard protocol, the CAN-High communication line is assigned to Pin 6 and the CAN-Low line is assigned to pin 14 of the OBD2 socket as default. If the car is not complying with the standard, therefore the actual communication lines are assigned to the different pins, please select “Configuration” and change the settings accordingly.



[Default Setting]



[Settings Changed: CAN-Low assigned to pin 15]

Selecting “Reset” will restore the default settings.

High Speed CAN
Select the signal pins if the test vehicle's actual communication signal pins are assigned differently.
Select the "Reset" button to restore the default settings.
OBD2 Connector (Vehicle Side)
1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16
High Line
Low Line
Power
Ground
High Line
Low Line
Reset
Save
Cancel

[“Reset” for default setting restoration]

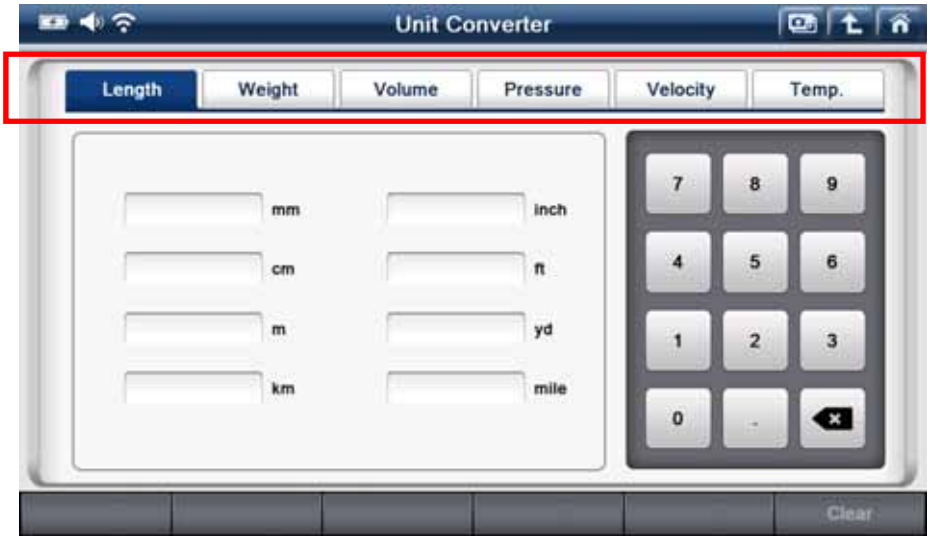
D. Interactive menu for changing the settings follows when “Configuration” is selected as shown below. Select “High Line” to select the pin assigned for CAN-High communication line.

High Speed CAN
Select the signal pins if the test vehicle's actual communication signal pins are assigned differently.
Select the "Reset" button to restore the default settings.
OBD2 Connector (Vehicle Side)
1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16
High Line
Low Line
Power
Ground
High Line
Low Line
Reset
Save
Cancel

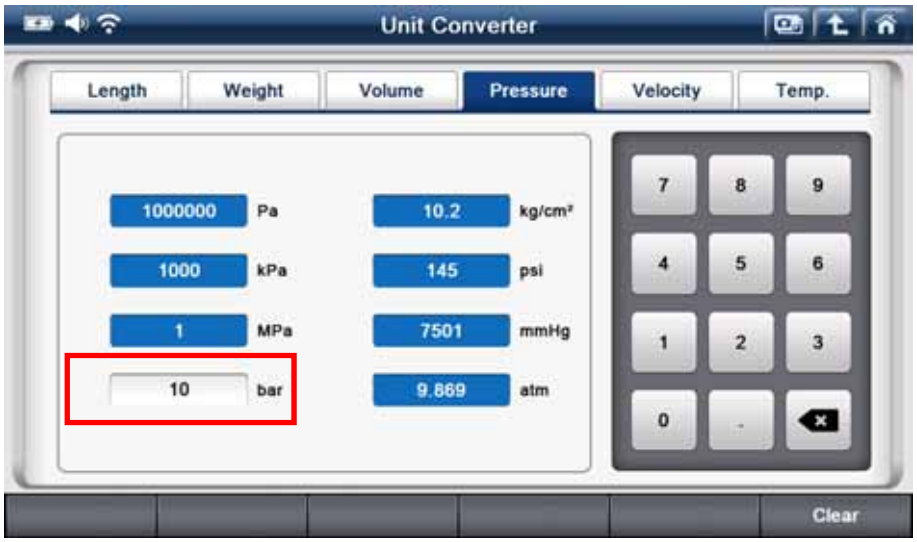
When the custom pin assignment is completed, select “Save” to save the changes.

3-2. Unit Converter

This is a utility function used for converting the length, weight, volume, pressure, speed and temperature readings to the different measuring units.



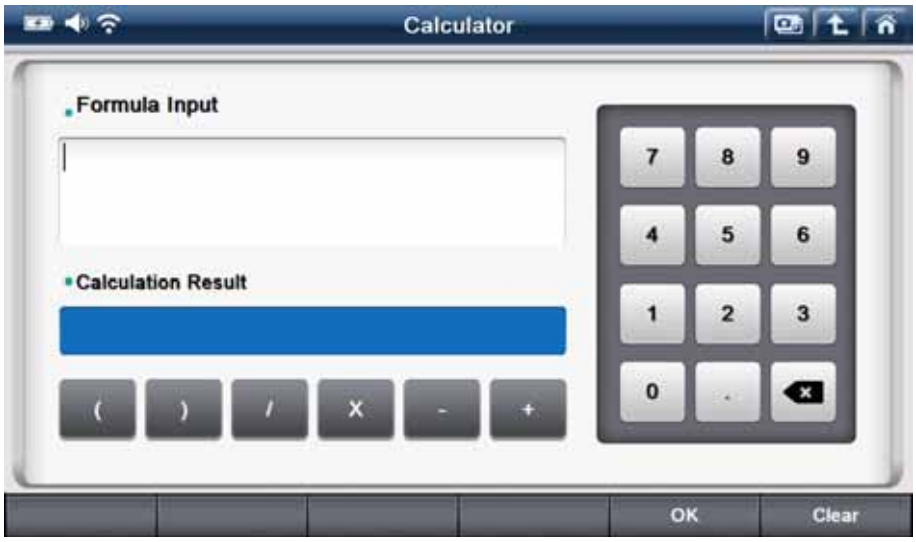
[Unit Converter Menu]



[Unit Conversion – Different pressure measuring units converted from 10 bar]

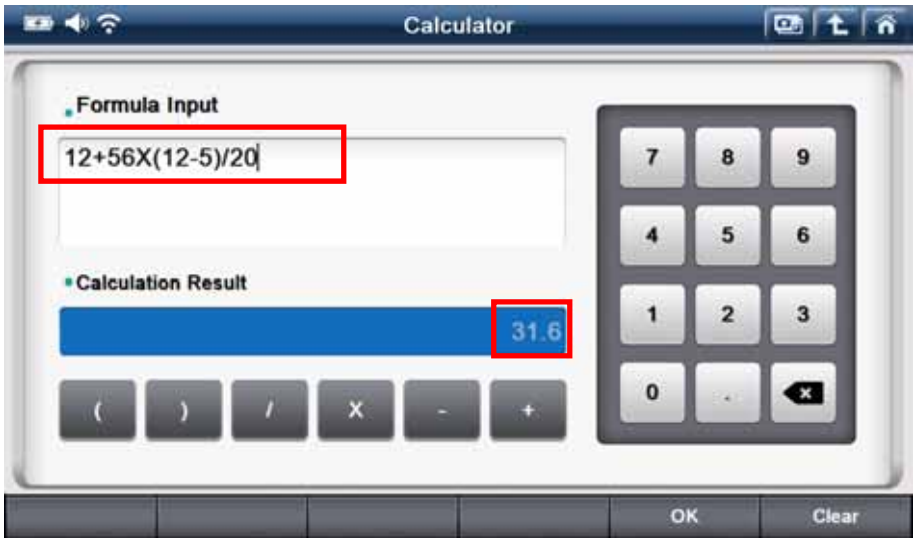
3-3. Calculator

This is a utility function that works like a simple calculator.



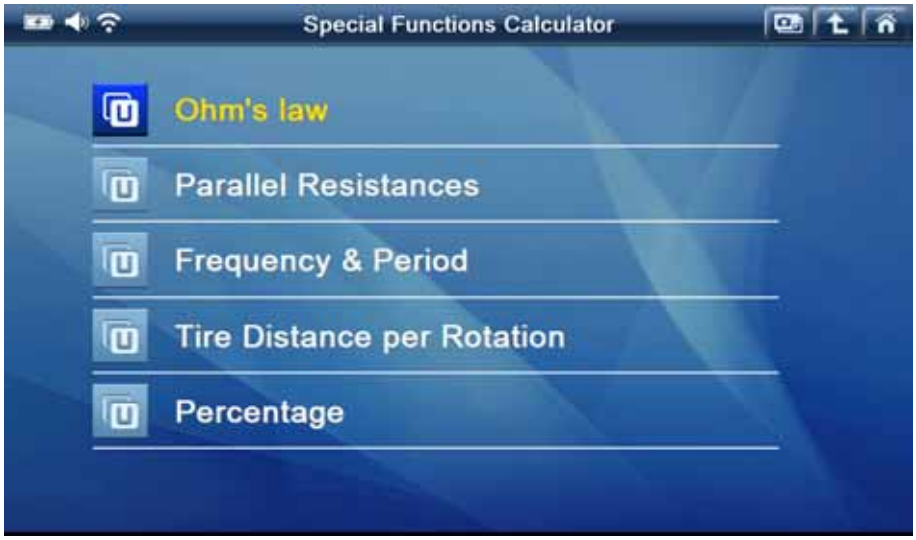
[Calculator]

The difference from an ordinary calculator is that you can type in the lengthy formula to get the result.



3-4. Special Functions Calculator

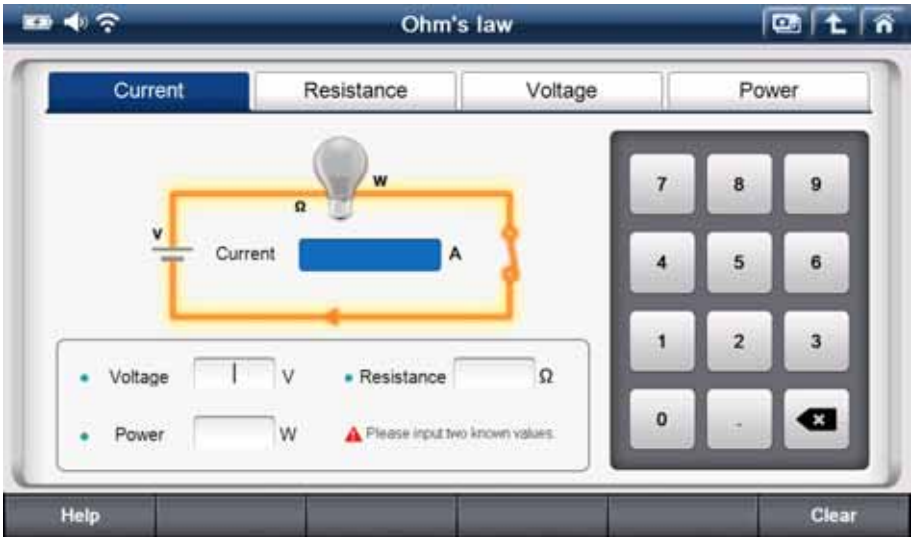
This is utility that offers a set of functions that are used frequently at the workshops, which include Ohm's law, parallel resistance, frequency/duty cycle, distance per tire rotation and percentage calculation.



[Special Functions Calculator Menu]

A. Ohm's Law

This function is to get the value you want from the given data with correlation among Amperage, Voltage, Resistance and Wattage according to the Ohm's law.



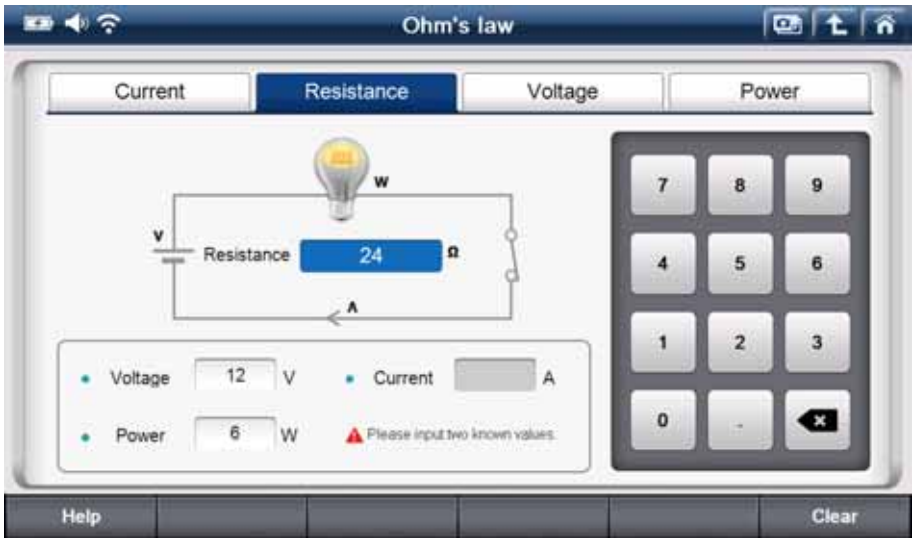
a. Amperage

Input any known 2 values of Voltage, Resistance and Wattage, then Amperage is calculated.

[Example. Amperage Calculation]

b. Resistance

Input any known 2 values of Voltage, Amperage and Wattage, then Resistance is calculated.



[Example. Resistance Calculation]

c. Voltage

Input any known 2 values of Resistance, Amperage and Wattage, then Voltage is calculated.

[Example. Voltage Calculation]

d. Wattage

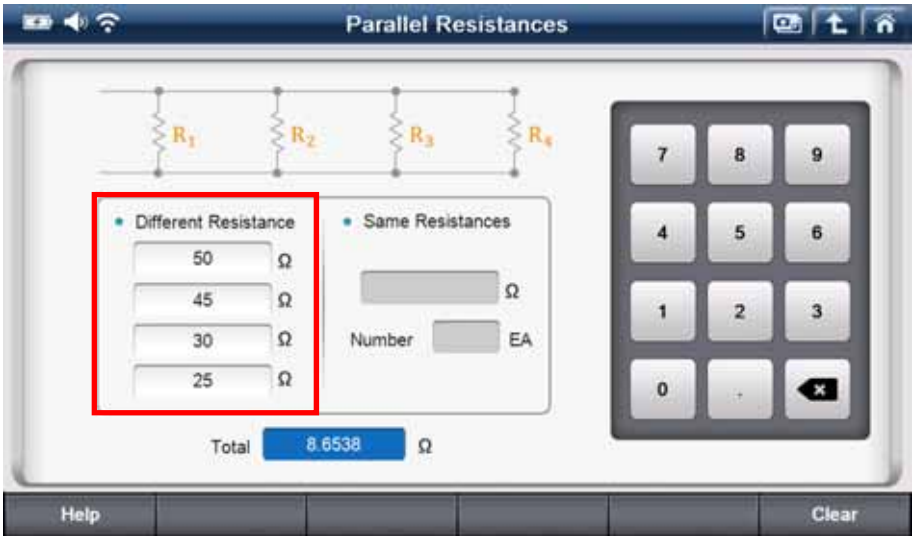
Input any known 2 values of Voltage, Resistance and Amperage, then Wattage is calculated.

[Example. Power Calculation]

B. Parallel Resistance

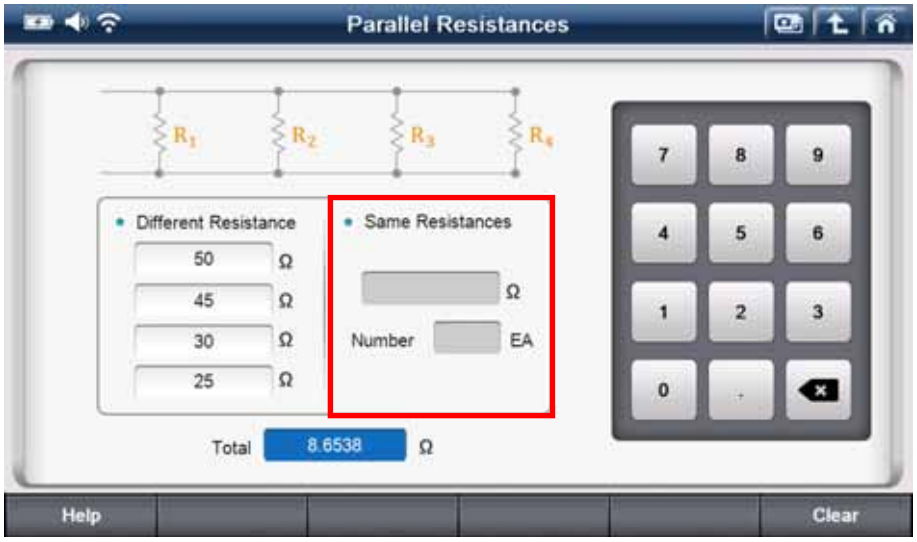
This function helps the user calculate the combined resistance of all resistors connected in parallel in the circuit.

The parallel resistance is calculated by typing in the resistance values of up to 4 resistors connected in parallel if the resistors have different resistance values. For more than 5 resistors, please get the parallel resistance for the first 4, and then input the result and the more resistance values to get the final result.



[Parallel Resistance – individual resistance value input]

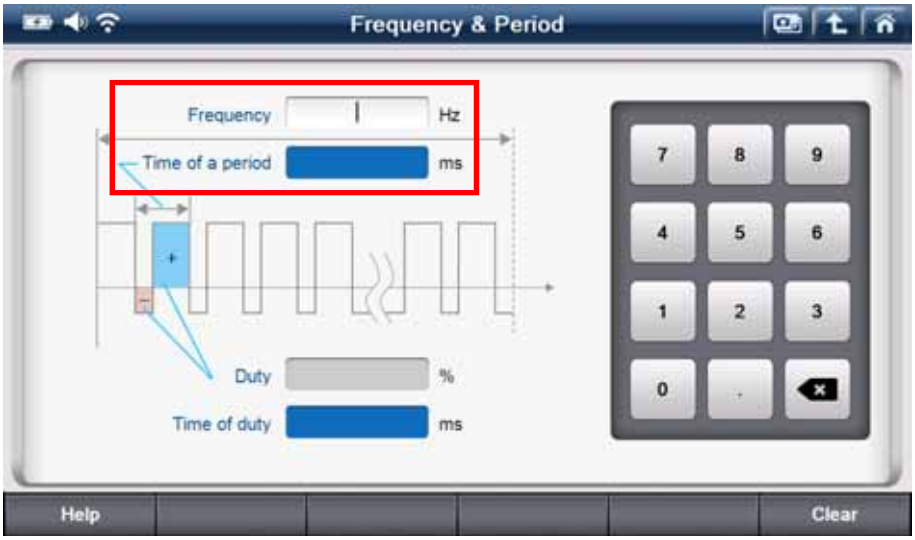
If the resistors are of the same resistance values, type in the value and the number of resistances to calculate the total parallel resistance.



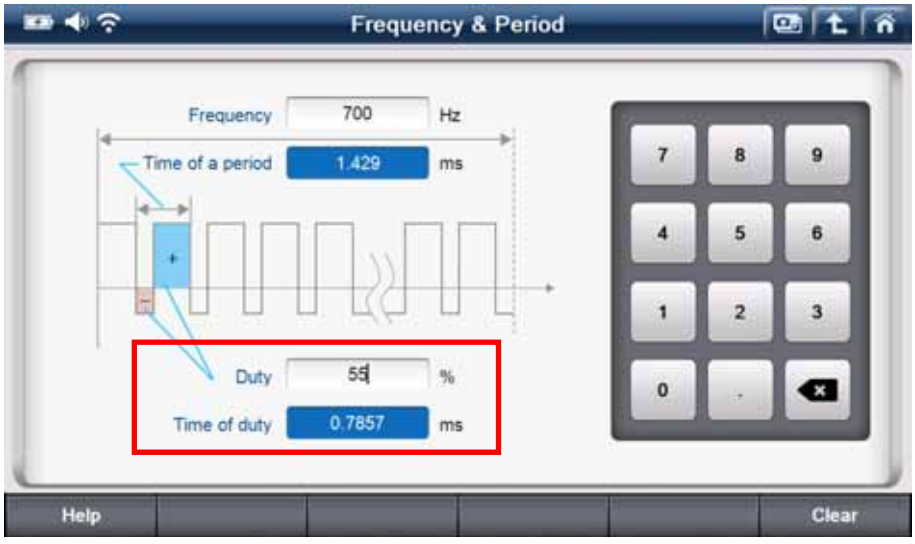
[Parallel Resistance – Multiple resistances of same value]

C. Frequency and Period

This function helps the user calculate the duration of one cycle according to the frequency and duty. While frequency means “working numbers per second”, this function converts it to “duration of each work”.



[Frequency and Period. Ex. Duration of a cycle]



[Frequency and Period. Ex. Duration of duty]

D. Tire Distance per rotation

This function is used for calculating the distance traveled when a tire revolves one time based on the width, flatness ratio and inner diameter that can be checked on the surface of any tires.

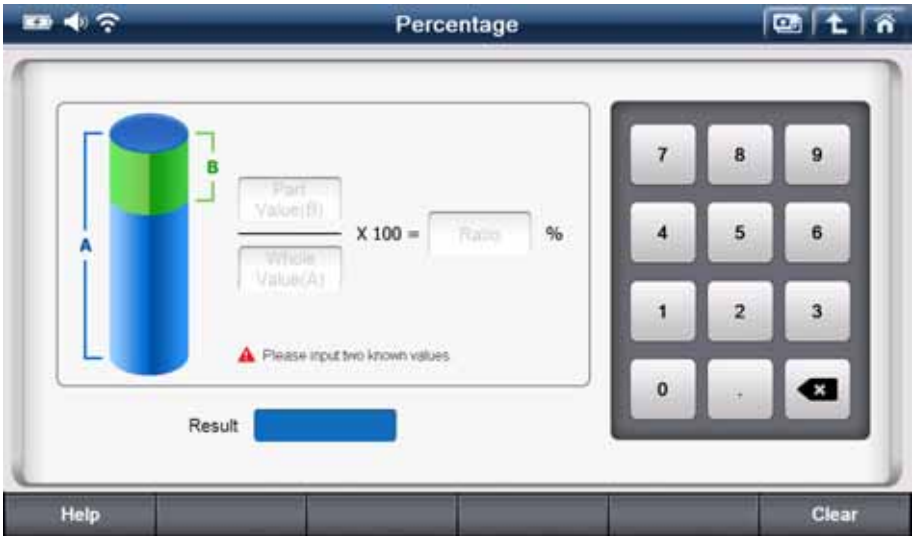
205 / 60 R 15

Width **Flatness Ratio** **Inner Diameter**

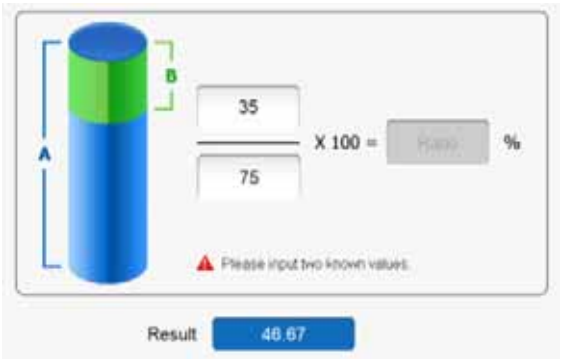
[Distance per tire revolution]

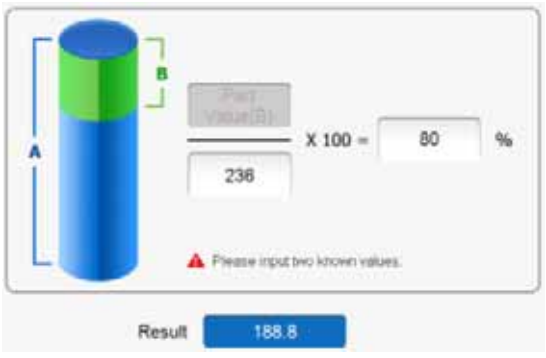
E. Percentage

This function calculates the one out of the other two input variables among Total Value, Percentage and Partial Value.



[Percentage Calculation]





Bottom Menu

The bottom menu includes the buttons for Internet Update and Power Control.

[Bottom Menu]

Icon	Title	Description
	Internet Update	Activates Internet Quick Update function. G-scan2 needs to be registered on GIT's server before using this function and connected to internet through WiFi networking. Software for just one brand can be downloaded at a time for this quick update function. Use of PC Utility is recommended for downloading multiple brands
	Power Control	Switches G-scan2 to the Stand-by mode after 5 seconds.

1. Internet Quick Update

G-scan2 software update is released every 3 months, and the minor patches can be released in response to customer feedback more frequently as needed. G-scan2 needs to be updated of its software to add the new features for extending the coverage for more brands, models and functions as well as the improvement of the product performance.

G-scan2 internet update can be done in 2 ways:

- Download by Direct WiFi Connection
- Download using PC Utility

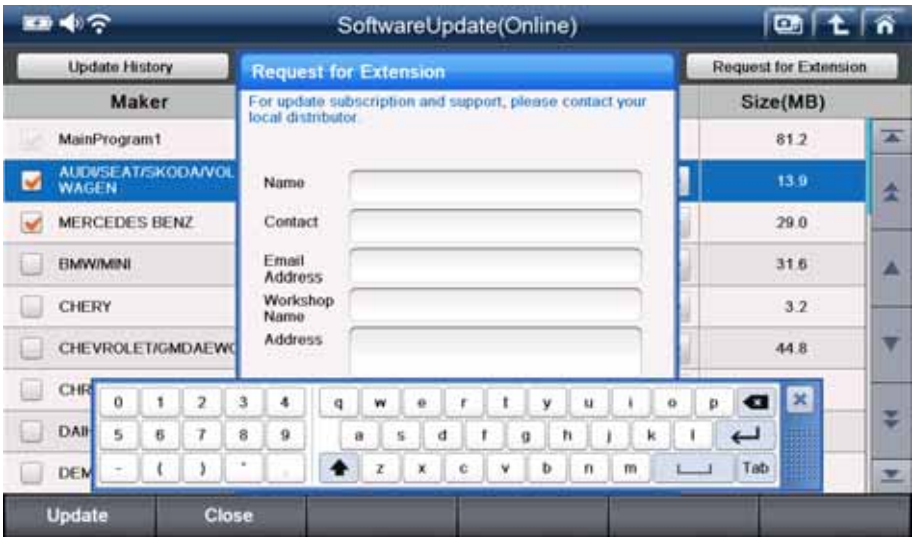
1-1. Quick update by Direct WiFi Connection

Utilizing the onboard WiFi module, G-scan2 can access to GIT's update server directly through internet, check the available updates, select and download the update files.
All these operations can be done on the G-scan2 base unit.

A. Please make sure that the G-scan2 is connected to the internet through the WiFi network. Select Internet Update icon in the bottom left of the main menu, then the internet update function is initiated.

B. Check the availability of new updates.
"New" icon represents that the new update is available for the car manufacturer.

If the update subscription has been expired, no car manufacturers will be listed.
In this case, please check the Expiry Data information provided in the upper right side of the screen and contact your local distributor for the renewal or extension of the G-scan2's update subscription. Or, simply select the "Request for Extension" button in the top right corner, fill in the pop-up query with your contact information and select "Confirm", then the request will be sent to your local distributor automatically.



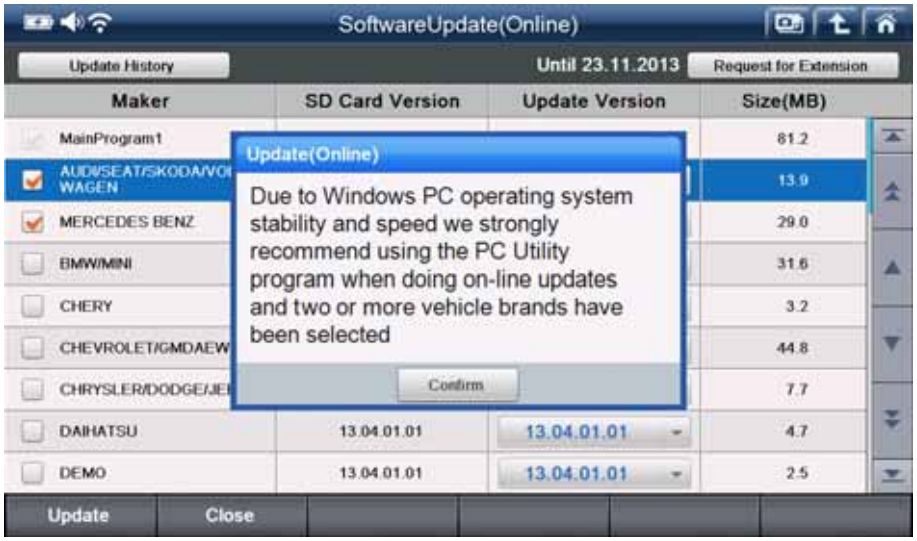
The download server may offer multiple versions for each vehicle brand, therefore you can also select the older version if available in case you do not like the new features and want to restore the known best version.

C. Select the car manufacturer by ticking on the check box.

D. Even though G-scan2 is running on the latest Windows CE system, when compared with PC's Windows operating systems, it shows relatively limited stability and performance for conducting heavy operations like downloading, extracting, deleting and copying the big size files.

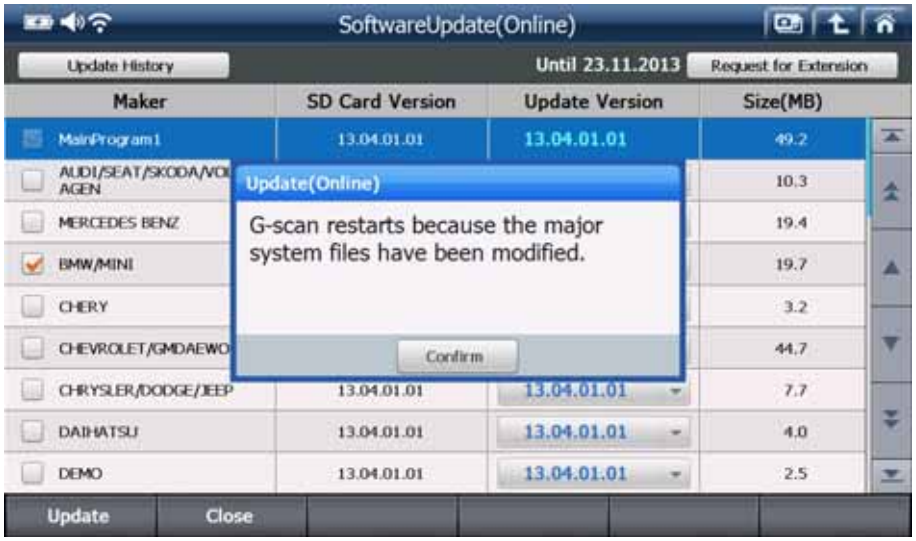
Direct WiFi download is allowed for downloading the programs for 1 vehicle brand at a time, and when the 2nd car manufacturer is selected from the menu, the warning message will pop up as shown below.

Please use the PC Utility program when doing on-line updates for more than 2 car manufacturers.



E. Select “Update” button in the bottom left corner, then G-scan2 begins downloading the selected files from the server. Software update is consisted of total 4 steps – downloading, deleting, copying and verifying and the progress is indicated as shown below.

F. Select “Close” button when the software update is completed.
In most cases, G-scan2 needs to restart to apply the newly downloaded updates.
Select the “Confirm” button to let the G-scan2 restart its system.



1-2. Download using PC Utility

In case the WiFi facility is not available or downloading the files for 2 or more car manufacturers is required, PC Utility needs to be used for updating the G-scan2 software.

Please refer to the Chapter 4. G-scan2 PC Utility in this manual for more details.

2. Power Management

Selecting this button works primarily the same as pressing the [Power] key shortly.

When selected, the following window pops-up for further selection – sleep mode or complete power off.

Select Standby Mode button to let the G-scan2 enter into the hibernating mode, then G-scan2 will restart instantly by a key stroke or a touch on the screen, without the boot up sequence.

Select Power Off button to turn the G-scan2 completely. G-scan2 will make a cold start taking the normal boot up sequence when the [Power] key is pressed.

3.2. Recorded Data

Recorded Data Function

Saved screen captures, flight record data and the oscilloscope waveforms can be reloaded for review by selecting this function.

Select “Recorded Data” and press the ENTER key (or double touch) from the main menu.

Data Type

Selecting the Recorded Data function from the main menu is followed by the list of the files contained in the G-scan2 SD card.
The types of the recorded data files are indicated in the right of the screen.

- Image: Screen capture image file saved using all functions.
- Sensor: Flight record data file saved using Diagnostic Function.
- Scope: Oscilloscope waveform replay file saved using Measurement Function

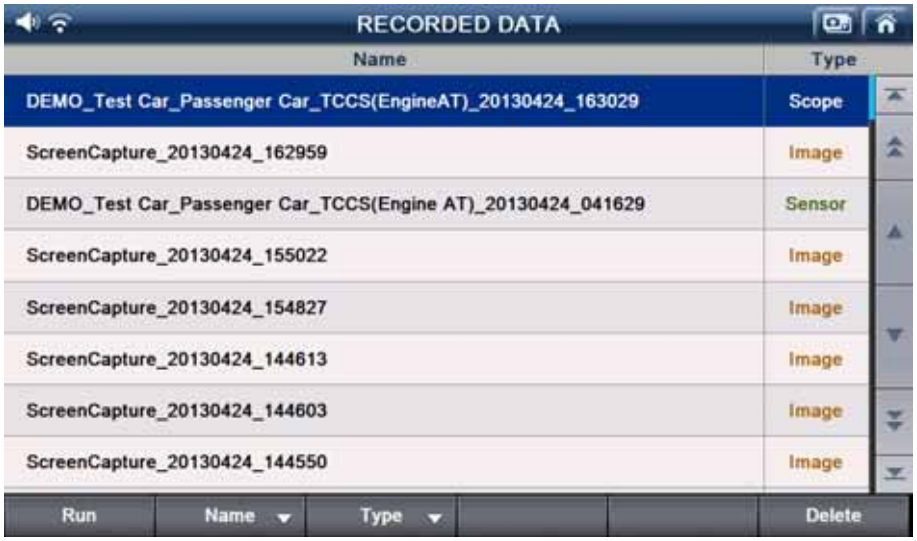
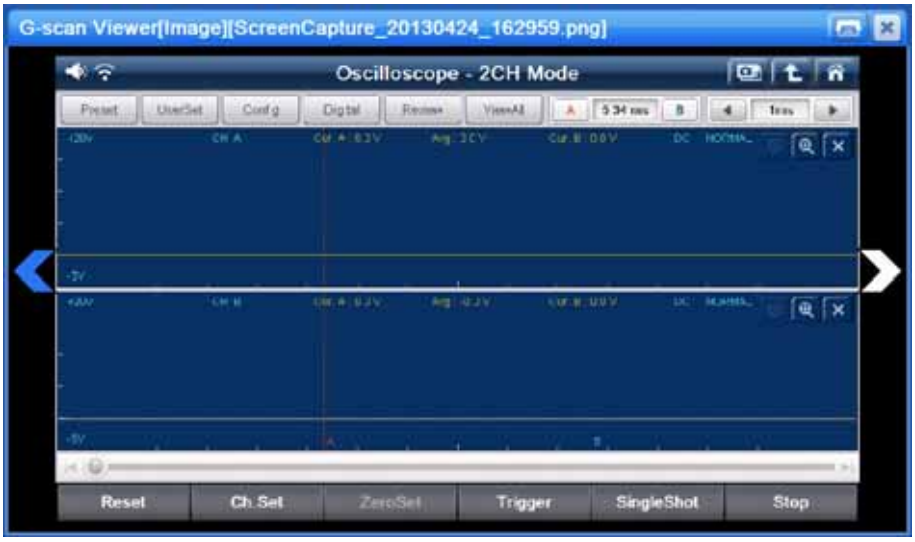


Image Viewer

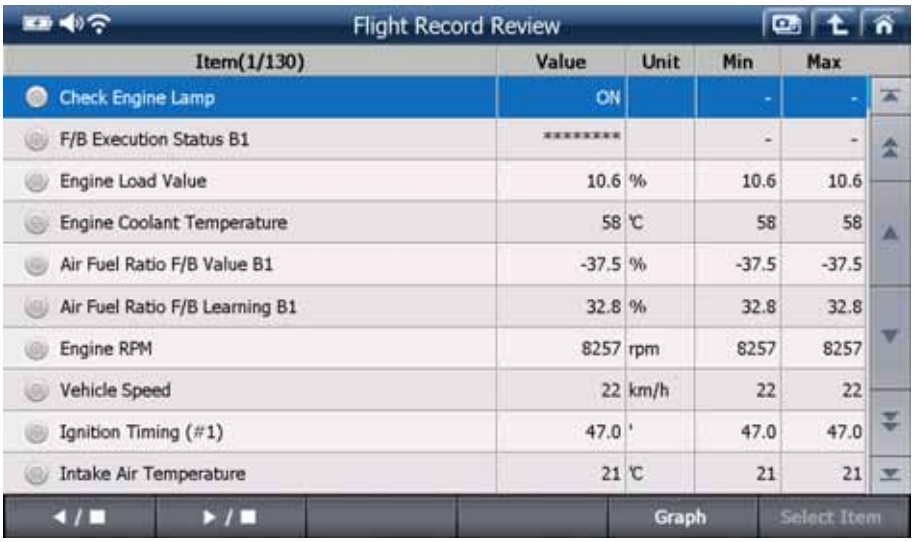
Select the Image type file and select “Run” button in the bottom. Then the image viewer is activated, and you can view the next or previous image contained in the SD card by selecting the right and left arrow head marks.



Flight Record Review

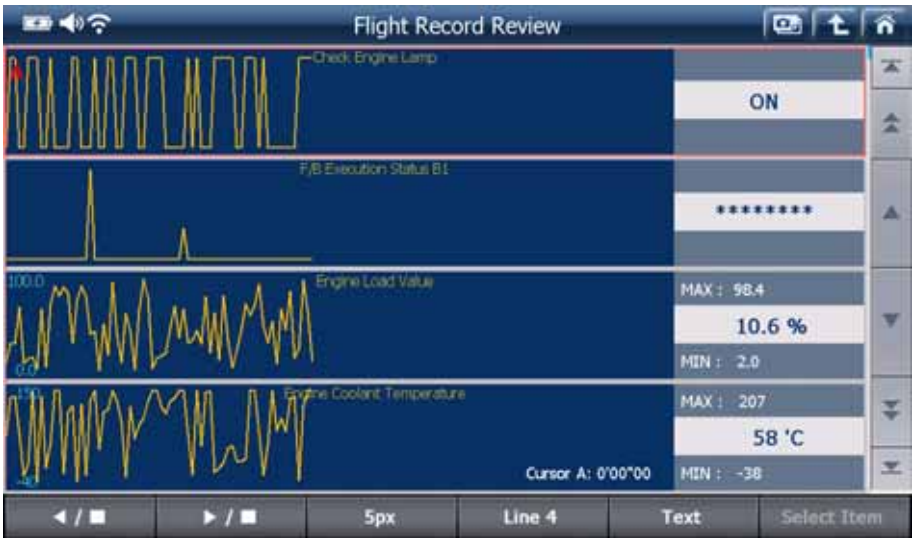
1. Text mode

Select the Sensor type file and press the “Run” button. Then the Flight Record function is activated and you can replay the recorded live data parameters in numeric or graphical form as shown below.



Control button	Description
◄ / ■ ► / ■	Replay the recorded data forward and backward
Graph	Switch to the graphical mode.

2. Graphic Mode



Control button	Description
◄ / ■ ► / ■	Forward and reverse replay control using these buttons is also possible in the graphical mode
15px	Graph size can be controlled by selecting the pixel per frame (1px -> 5px -> 15px). The more pixels per frame make the graphs bigger and vice versa.
Line 4	Number of graphs that appear on the screen also can be selected among 1, 2, 3 or 4 line(s).
Text	Switch to the numeric data mode by selecting “Text”,

Oscilloscope Waveform Replay

Select the Scope type file and press the “Run” button to replay the recorded oscilloscope waveform data.

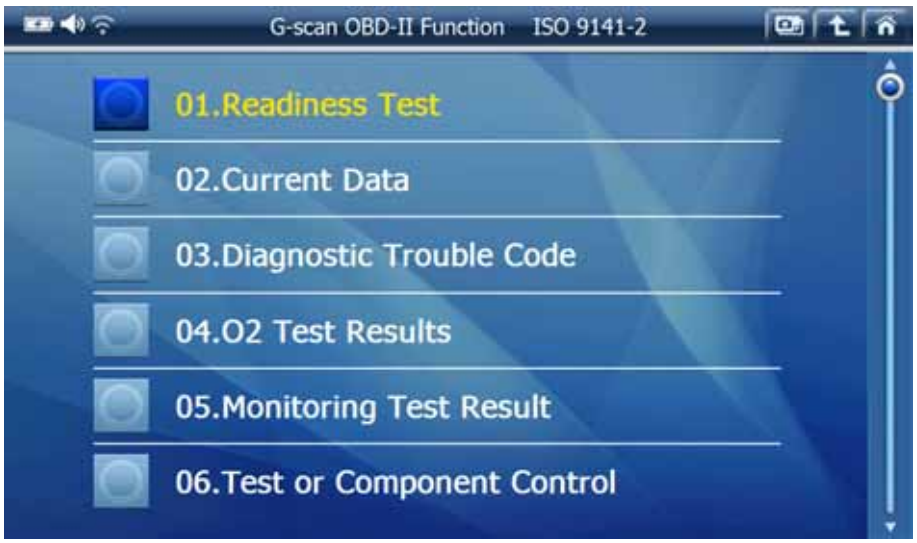
Control button	Description
⏮	Brings to the first frame of the recorded waveform data
◀◀	Replays the data reversely
■	Stops replaying the data
▶▶	Replays the data forward
⏭	Brings to the last frame of the recorded waveform data
File List	Returns to the data file selection menu

3.3. OBD-II

OBD-II Function

OBD-II function is used for diagnostics of OBD-II or EOBD complaint vehicle's emission-related powertrain control system supporting the industrial standard protocols including ISO9141-2, ISO14230-4 <KWP2000>, SAE J1850 VPW, SAE J1850 PWM and ISO15765-4（CAN）

Make the connection with the car using the main DLC cable, and select the "OBD-II" icon.



OBD-II

On Board Diagnostics was designed and mandated in order to monitor malfunction or failure of the car's emission control system. By illuminating the warning lamp on the dashboard, the OBD system alerts the driver in case the emission control system is failing or inefficient, allows the ordinary mechanic may immediately comprehend what is the problem by use of a proper diagnostic device, consequently contributes to minimizing the chance of emitting excessive exhaust gas.

OBD-II was introduced as an update of OBD in a way of increasing the efficiency of OBD system by standardization. Thanks to the efforts made for standardization, a mechanic can get the fault code information and data from all the cars that support ISO and SAE industrial standards regardless of brand or car make.

The shortcoming of standardization is the narrowed scope of information: what you can get is the emission related minimum scope of information based on "commonly found in every car" concept.

OBD-II Fault Codes

SAE and ISO industrial standard documents define the OBD-II and EOBD codes are consisted of a three-digit numeric code preceded by an alpha-numeric designator.

The alpha-numeric designators are "P0~P3", "B0~B3", "C0~ C3" and "U0~ U3" corresponding to Power train, Body, Chassis, Network Communication systems.

Codes	system	Included sub-systems (examples)
P0*** ~ P3***	Power train	Engine, Transmission
C0*** ~ C3***	Chassis	ABS, Suspension, Traction
B0*** ~ B3***	Body	Airbag, Air conditioning, lighting
U0*** ~ U3***	Network	CAN, Inter-system communication

Manufacturer Specific Fault Codes

Not all the fault codes were standardized. The fault codes that can be commonly applied to any "internal combustion" vehicles were defined as standard codes. This is also called as "Generic codes" or 'Core codes

The larger portion of the entire codes was not standardized due to fundamental differences of each car Make's system design or diagnostic strategy. The codes that are reserved for each car manufacturer's own definition are called "Enhanced Codes" or "Non-standard codes"

C0*** and B0*** codes are also defined as the Generic Codes. However the actual list of the standard codes for these Body and Chassis control systems has not been released to public yet. Therefore, it is assumed that there are no known Generic Codes for these systems.

The codes that [Generic OBD2 / EOBD] function can access are just the Generic Codes.
If any enhanced (or non-standard code) is detected, the scan tool shows it as an “Undefined” or “Unknown code” because these non-standard codes are defined differently by the car manufacturers.

Enhanced Codes can be properly read in accordance with the manufacturer’s own definitions, please
select the [Diagnosis] from the initial menu and follow the model selection procedure.

EOBD and OBD-II Revision

Version 1996

The generic (standard) codes were originally defined by the SAE (Society of Automotive Engineers) document J2012 published by in 1992.

At the time of publication of the document, P2*** and P3*** codes were reserved for future use and not included in the standard codes.

Revision in 2002, after EOBD implementation

When the EOBD was mandated in 2001, the EOBD generic codes were suggested in accordance with the ISO/DIS15031-6 document and the original American SAE J2012 document was also revised for uniformity to form the global standard.

The P2*** and the P3*** codes were included in the list of standard codes in the revised documents.

OBD-II / EOBD code break-down

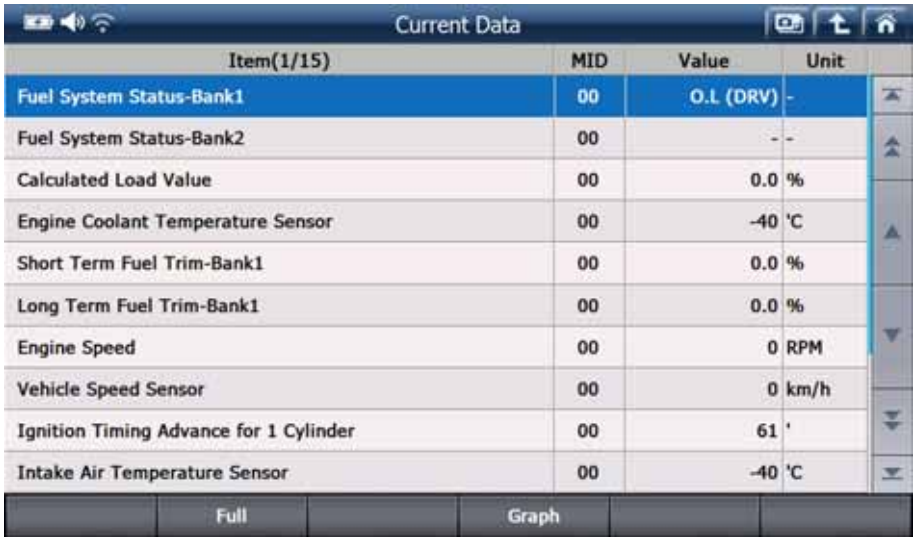
After the revision, the range of generic (standard) codes and enhanced (non-standard) codes now can be categorized as below:

Code No.	Defined Systems
P00XX	Fuel and Air metering and Auxiliary Emission Controls
P01XX ~ P02XX	Fuel and Air metering
P03XX	Ignition System or Misfire
P04XX	Auxiliary Emission Controls
P05XX	Vehicle Speed, Idle Control and Auxiliary Inputs
P06XX	Computer and Auxiliary Outputs
P07XX ~ P09XX	Transmission
P0AXX	Hybrid Propulsion

P0BXX ~ P0FXX	Reserved (for Standard Codes)
P1XXX	Manufacturer (Enhanced) Code
P20XX	Fuel and Air metering and Auxiliary Emission Controls
P21XX ~ P22XX	Fuel and Air metering
P23XX	Ignition System or Misfire
P24XX	Auxiliary Emission Controls
P25XX	Vehicle Speed, Idle Control and Auxiliary Inputs
P26XX	Computer and Auxiliary Outputs
P27XX ~ P29XX	Transmission
P30XX ~ P33XX	Manufacturer (Enhanced) Code
P34XX	Cylinder Deactivation
P35XX ~ P39XX	Reserved (for Standard Codes)
U00XX	Network Electrical
U01XX ~ U02XX	Network Communication
U03XX	Network Software
U04XX	Network Data

OBD-II / EOBD Current Data

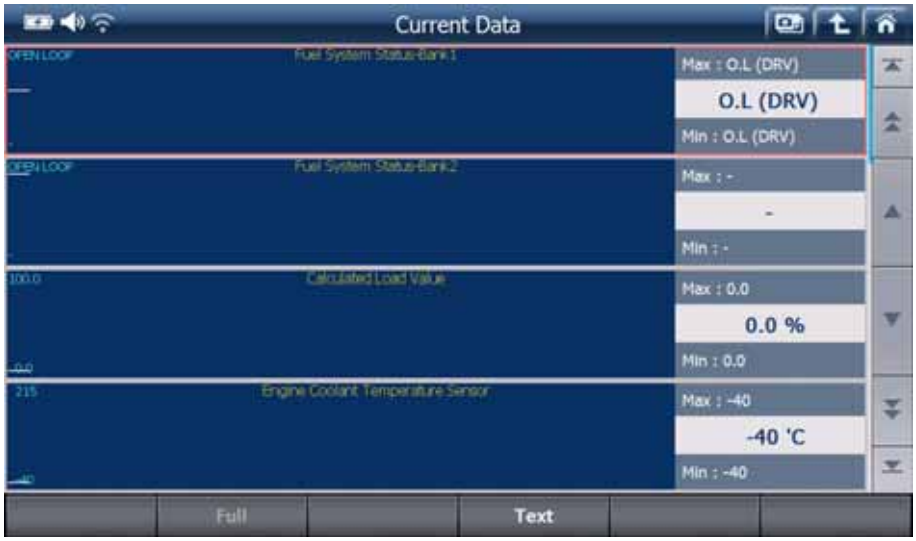
When [2. Current Data] is selected from the OBD-II/EOBD menu, the live data of the sensors and parameters are listed as shown below:



CAUTION

- When a function was selected from the OBD-II menu, the result may come up with “NOT SUPPORTED” reading as illustrated below, which means the selected function is not supported by the vehicle that is being tested.

In order to view the Current Data in graphical form, select the “Graph” button in the bottom.
And the “Text” button will switch to the numeric mode again.



3.4. Vehicle Diagnosis

Manufacturer Specific Diagnossis

Non-standard manufacturer specific diagnostic functions such as DTC Analysis, Data Analysis, Actuation Test, Special Functions including Reset or Coding are provided when “Vehicle Diagnosis” is selected from the main menu.

Select “Diagnosis” icon from the G-scan2 main menu

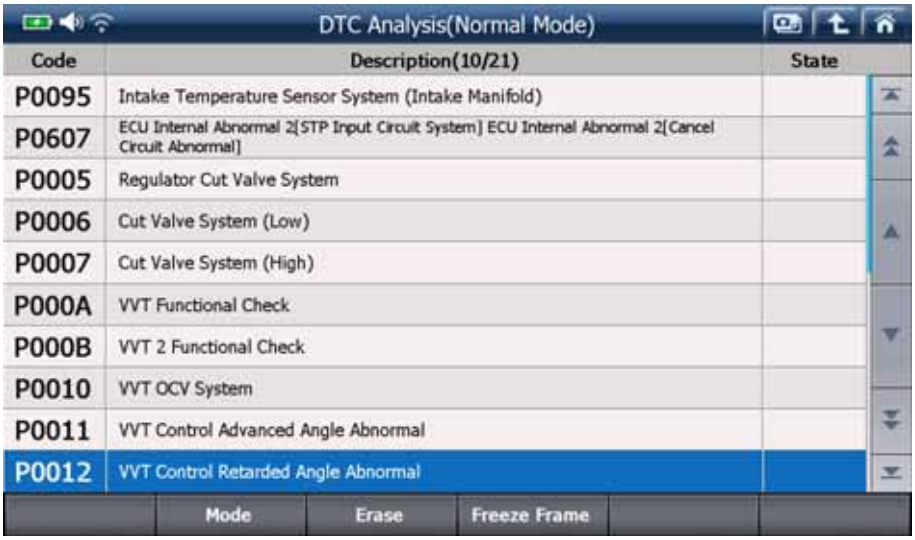
Diagnostic Functions

With the exceptions, following diagnostic functions are provided for the majority of the brands that G-scan2 supports. For more details, please refer to the coverage list which is published when the new update is released regularly.

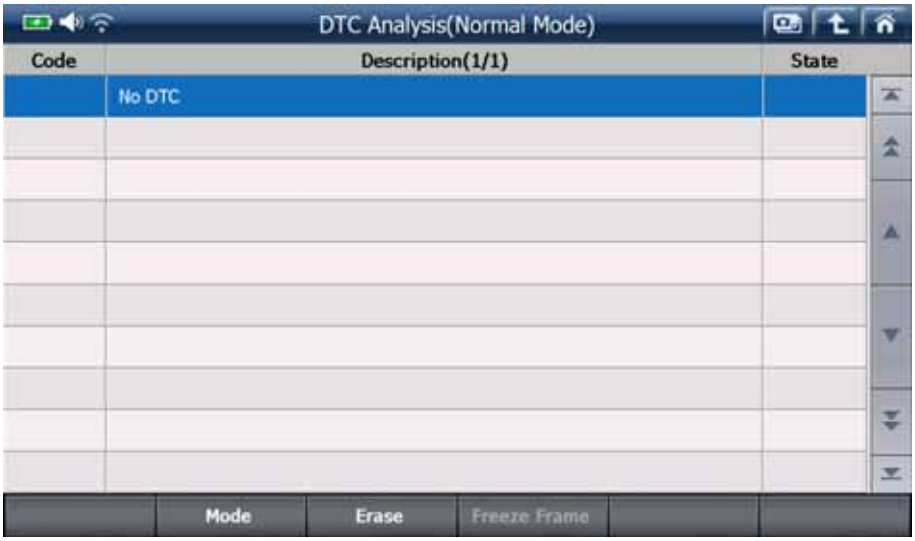
1. DTC Analysis

1.1. DTC Reading and Erasing

The basic diagnostic function used for reading and erasing the DTC (diagnostic trouble code) from the electronic control system.

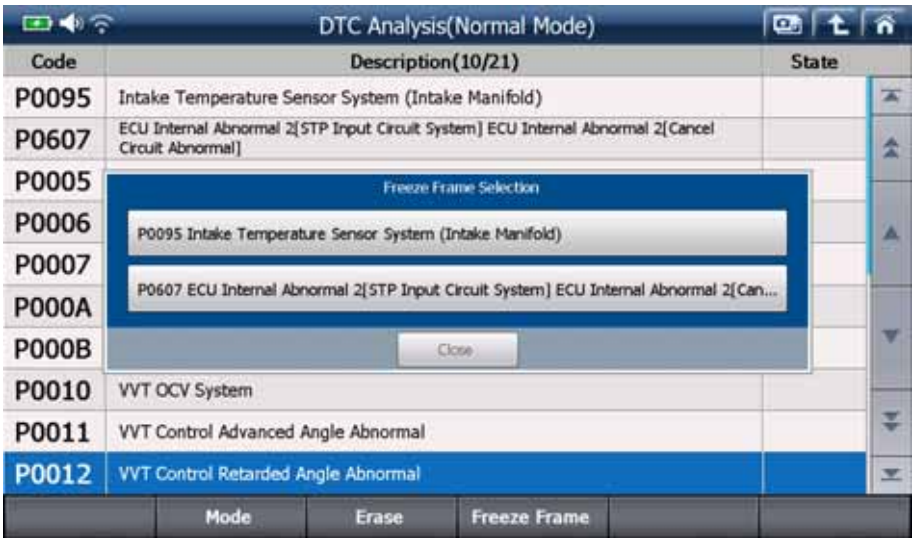

DTC Analysis(Normal Mode)
Code
Description(10/21)
State
P0095 Intake Temperature Sensor System (Intake Manifold)
P0607 ECU Internal Abnormal 2[STP Input Circuit System] ECU Internal Abnormal 2[Cancel Circuit Abnormal]
P0005 Regulator Cut Valve System
P0006 Cut Valve System (Low)
P0007 Cut Valve System (High)
P000A VVT Functional Check
P000B VVT 2 Functional Check
P0010 VVT OCV System
P0011 VVT Control Advanced Angle Abnormal
P0012 VVT Control Retarded Angle Abnormal
Mode
Erase
Freeze Frame

Select the “Erase” button to remove the DTC from the control unit’s memory.

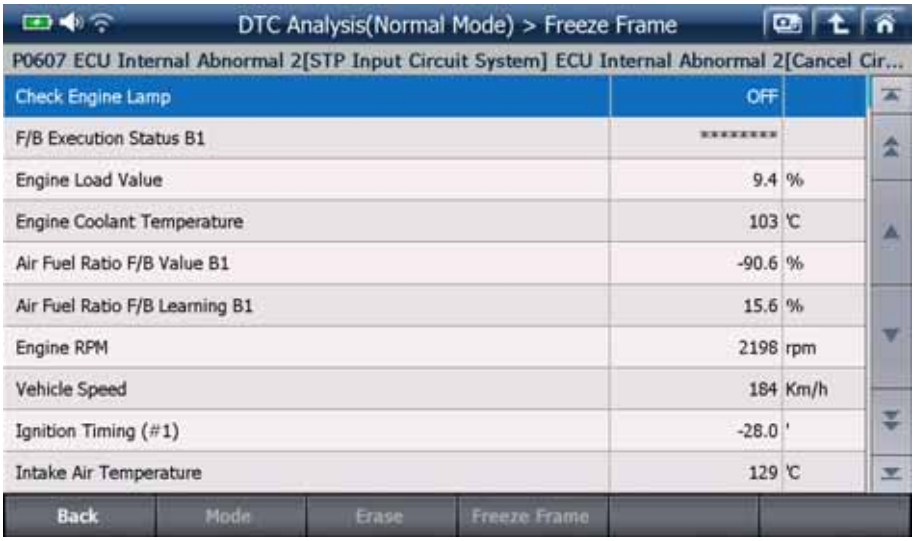


1.2. Freeze Frame Data

To aid the mechanic’s better understanding on what had happened to the vehicle’s control system before and after the DTC was logged, live Data parameters are recorded when the critical diagnostic trouble code was detected and logged to the control unit’s memory. Select the “Freeze Frame” button to list the freeze frame data recorded in the control unit’s memory.



Select the freeze frame data among the list, then the selected freeze frame data is retrieved from the control unit’s memory.


DTC Analysis(Normal Mode) > Freeze Frame
P0607 ECU Internal Abnormal 2[STP Input Circuit System] ECU Internal Abnormal 2[Cancel Cir...
Check Engine Lamp OFF
F/B Execution Status B1 ********
Engine Load Value 9.4 %
Engine Coolant Temperature 103 ℃
Air Fuel Ratio F/B Value B1 -90.6 %
Air Fuel Ratio F/B Learning B1 15.6 %
Engine RPM 2198 rpm
Vehicle Speed 184 Km/h
Ignition Timing (#1) -28.0 °
Intake Air Temperature 129 ℃
Back
Mode
Erase
Freeze Frame

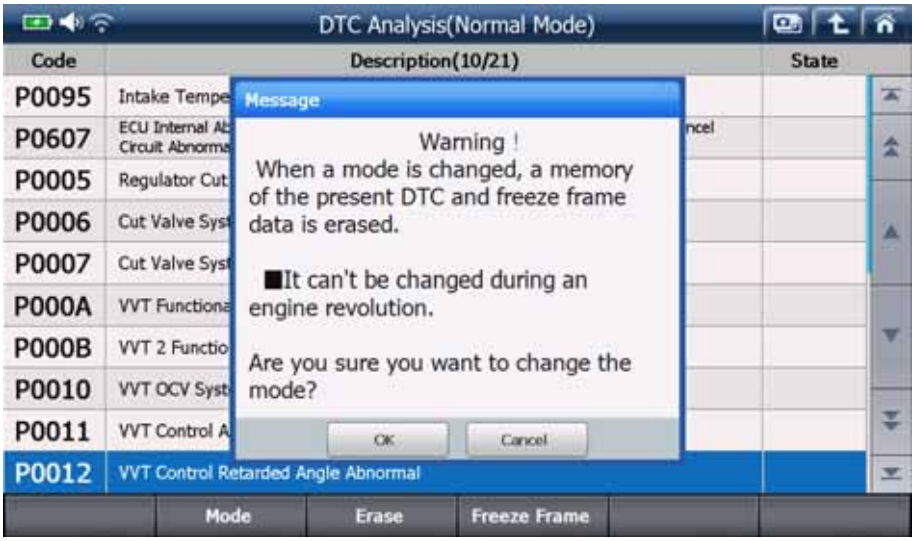
1.3. Manual reading and erasing for old vehicles

Reading and erasing the codes from the old vehicles of 1980's and early 1990's using G-scan2 or the other diagnostic tools may not be possible as the old control systems do not support bi-directional communication. Only manual reading and erasing are possible for those vehicles.

1.4. Advanced DTC functions for new vehicles

The late model vehicles provide diversified information through the DTC Analysis function.

For example the Toyota vehicles support switching to Check Mode where the control unit applies narrower allowance for fault code recognition in order to check the potential trouble codes with the defects of the marginal level.



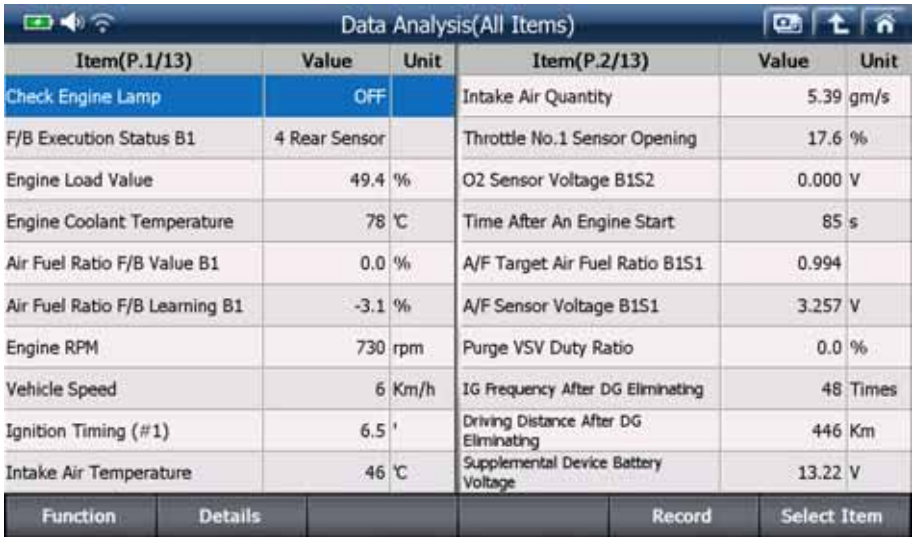
Some ABS systems support Test Mode that lists all the DTC's reserved for the system and conducts the calibration function at the same time. Each and every manufacturer supports different extra DTC Analysis functions in their own ways, therefore make sure to be acquainted with the different procedures and conditions before executing the manufacturer specific DTC Analysis functions.

2. Data Analysis

2.1. Live Data / Current Data

Data Analysis is also called as Live Data, Data List, Data Stream or Current Data by the car manufacturers, and it is one of the basic diagnostic functions that shows the data values of input and output side of a control system

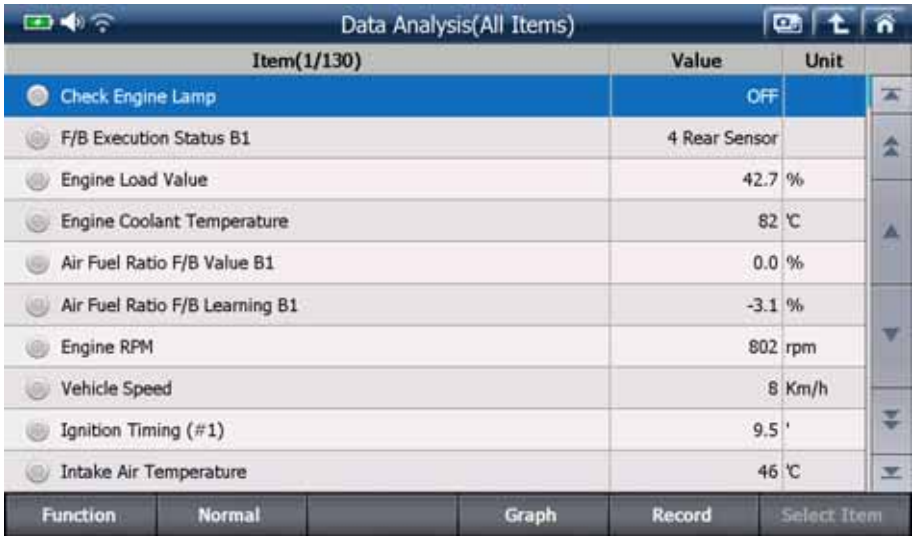
Select "Data Analysis" from the menu then the data parameters are listed as shown below.


Data Analysis(All Items)
Item(P.1/13) Value Unit
Check Engine Lamp OFF
F/B Execution Status B1 4 Rear Sensor
Engine Load Value 49.4 %
Engine Coolant Temperature 78 ℃
Air Fuel Ratio F/B Value B1 0.0 %
Air Fuel Ratio F/B Learning B1 -3.1 %
Engine RPM 730 rpm
Vehicle Speed 6 Km/h
Ignition Timing (#1) 6.5 '
Intake Air Temperature 46 ℃
Item(P.2/13) Value Unit
Intake Air Quantity 5.39 gm/s
Throttle No.1 Sensor Opening 17.6 %
O2 Sensor Voltage B1S2 0.000 V
Time After An Engine Start 85 s
A/F Target Air Fuel Ratio B1S1 0.994
A/F Sensor Voltage B1S1 3.257 V
Purge VSV Duty Ratio 0.0 %
IG Frequency After DG Eliminating 48 Times
Driving Distance After DG Eliminating 446 Km
Supplemental Device Battery Voltage 13.22 V
Function
Details
Record
Select Item

2.2. Details

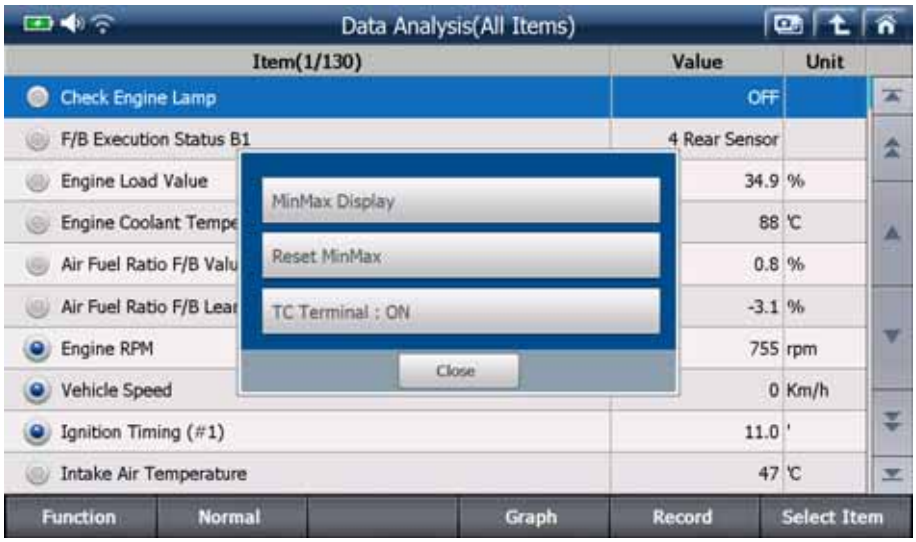
Select “Details” button in the bottom to switch the data display to a full page “Detail” mode, where up to 10 parameters are listed with more space to accommodate the longer parameter names.

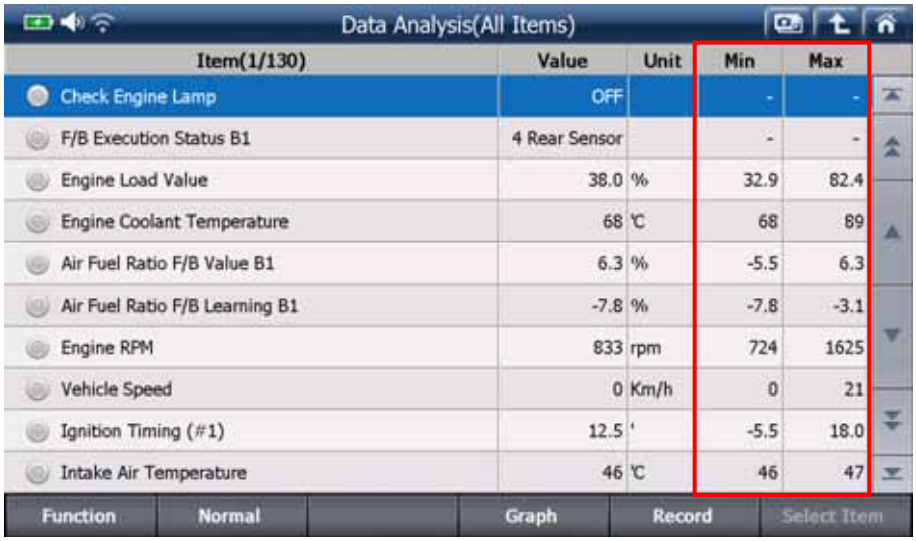
Select “Normal” button to return to the normal mode that shows up to 20 parameters in the split screen.



2.3. Function

A. Select “Function” button to add, remove or reset min/max information.



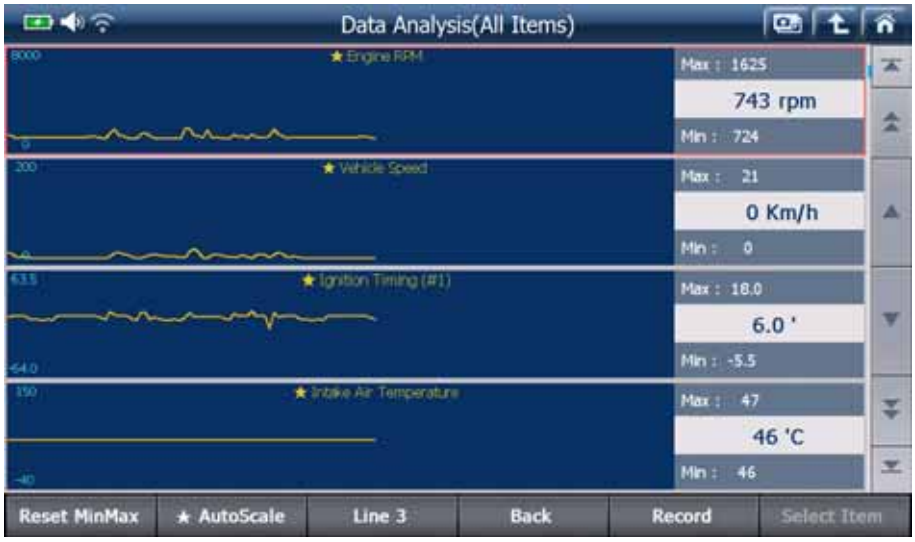


2.4. Old vehicles

Data Analysis for the old vehicles of 1980's and early 1990's using G-scan2 or the other diagnostic tools may not be possible as the old control systems do not support bi-directional communication.

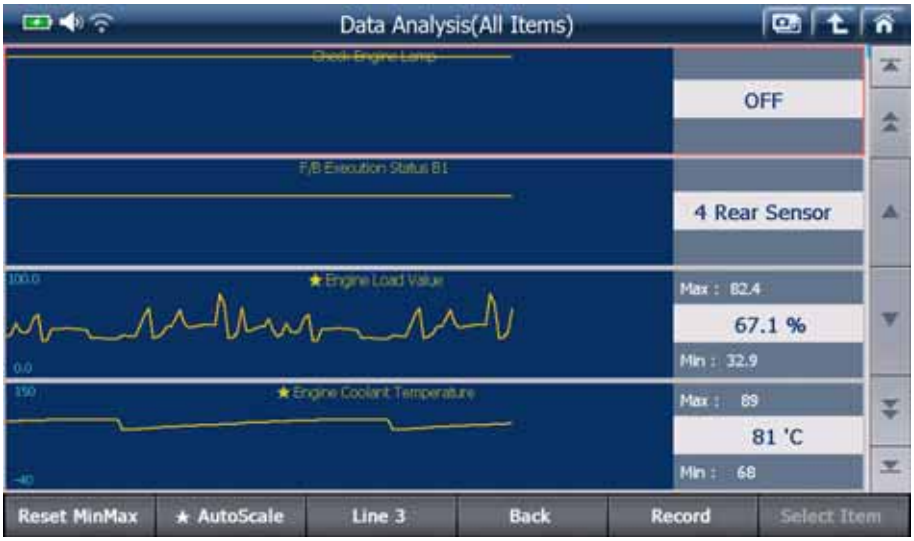
2.5. Graph Mode

Text based data parameters are switched to the graphical display mode when the "Graph" button in the bottom is selected.



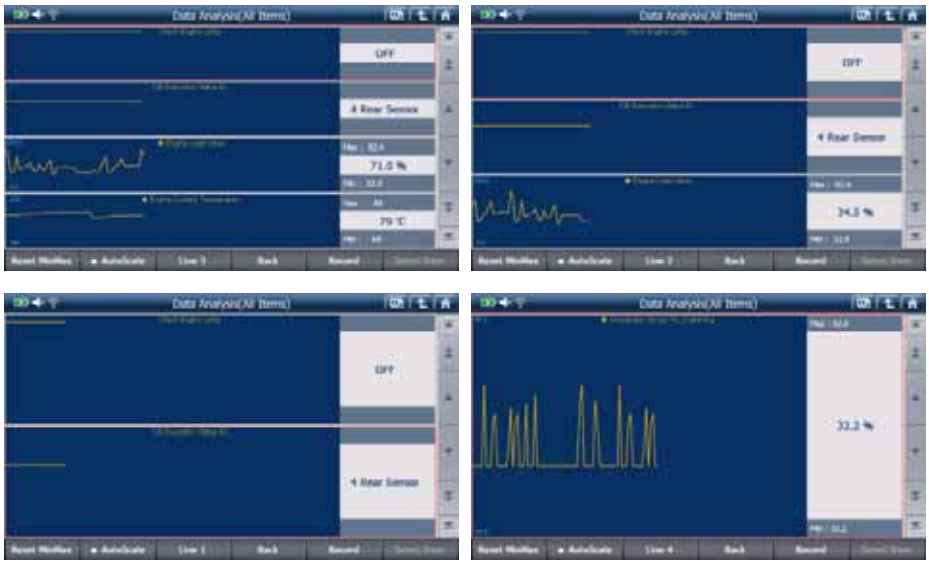
A. * AutoScale

Automatically adjusts the vertical resolution of the graphs to fit into the given space based on the min/max input values.



B. Line 3

Controls the total number of parameters that are graphed on the screen - changes 4 > 3 > 2 > 1 as the button is selected.



C. Back

Returns to the text based numeric data display mode.

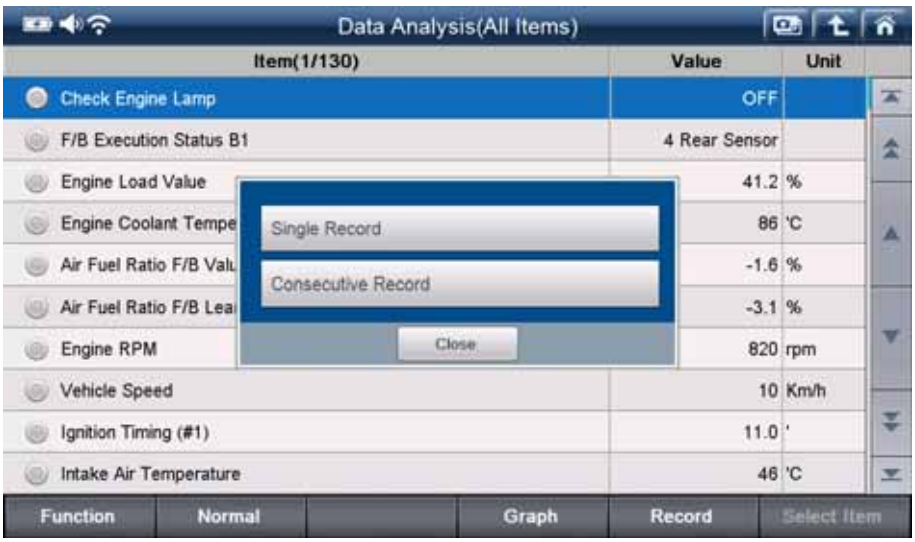
D. Record

Initiates the Flight Record function – please refer to the next paragraph.

2.6. Flight Record

A. Data Recording

Select “Record” button to start recording the data parameters, and then select among the single frame record or multiple “consecutive” record as shown below.

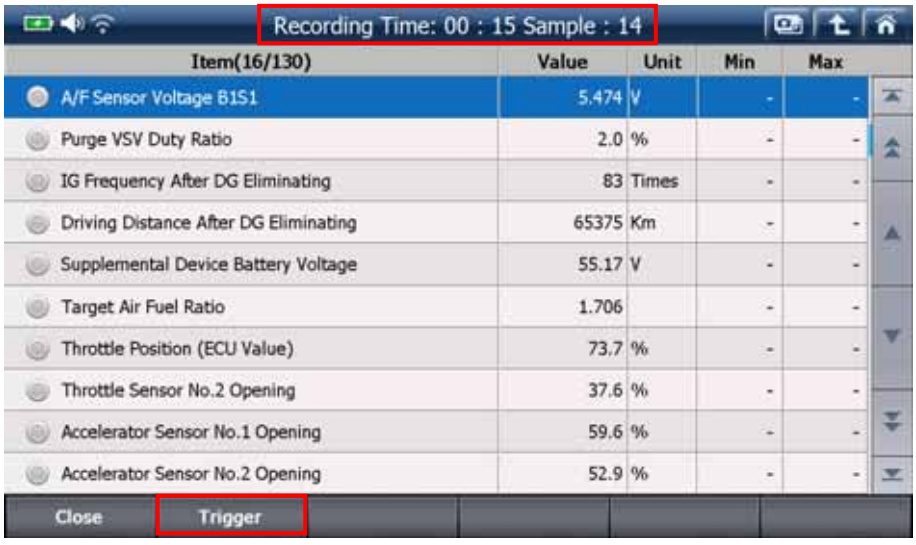


a. Single Record

Just one frame is sampled and recorded.

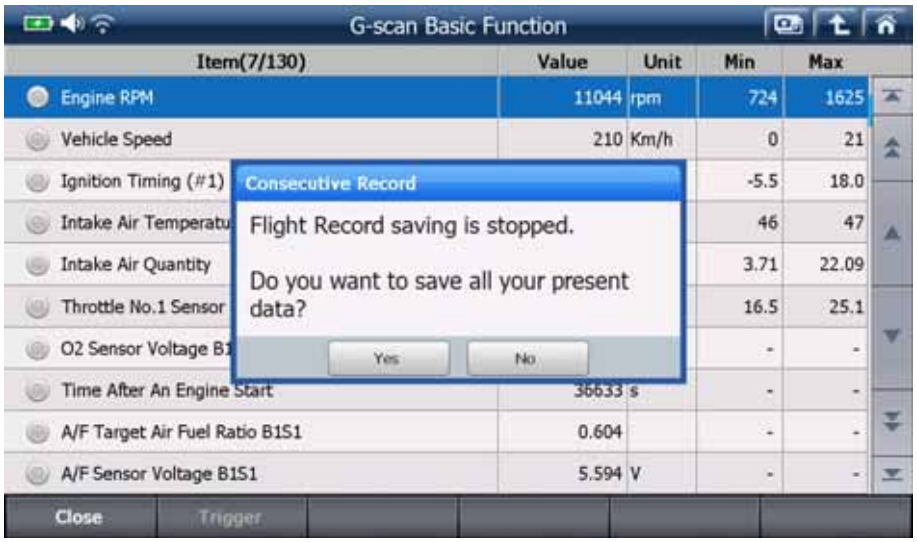
b. Consecutive Record

Consecutive multiple frames are recorded until stopped by the user.



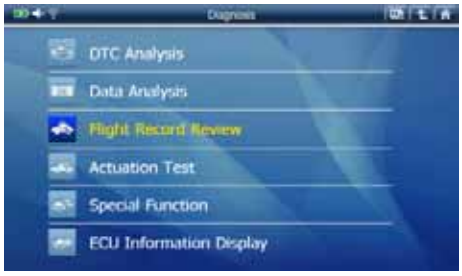
Select “Trigger” to mark the important or critical moment, which is going to be indicated when reviewing the data.

Select “Close” to stop recoding the data and select “Yes” to end, then the data is saved as the Flight Record Data in the G-scan2 SD card.



B. Data Review

Recorded data can be reviewed and replayed by selecting “Recorded Data” function from the G-scan2 main menu, or “Flight Record Review” from the diagnostic functions menu.



2.7. Select Item

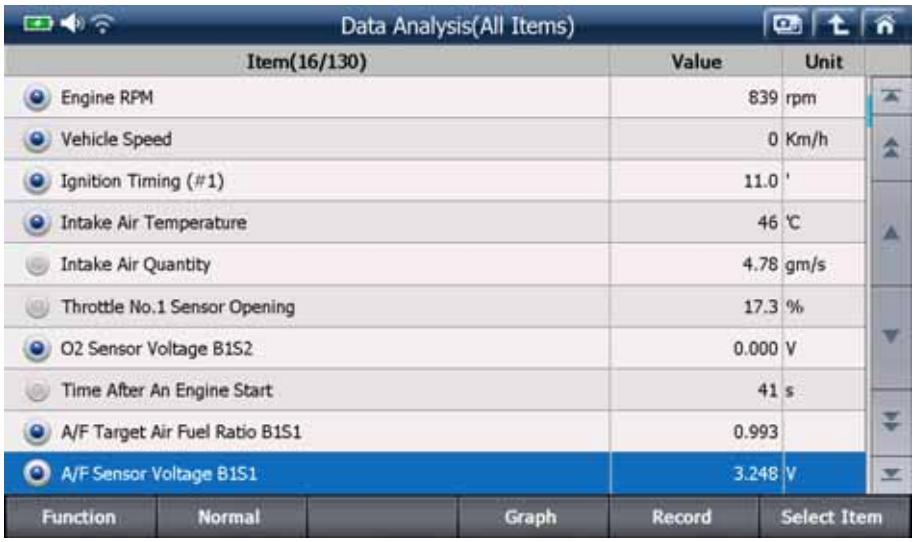
A. Lost among too many parameters

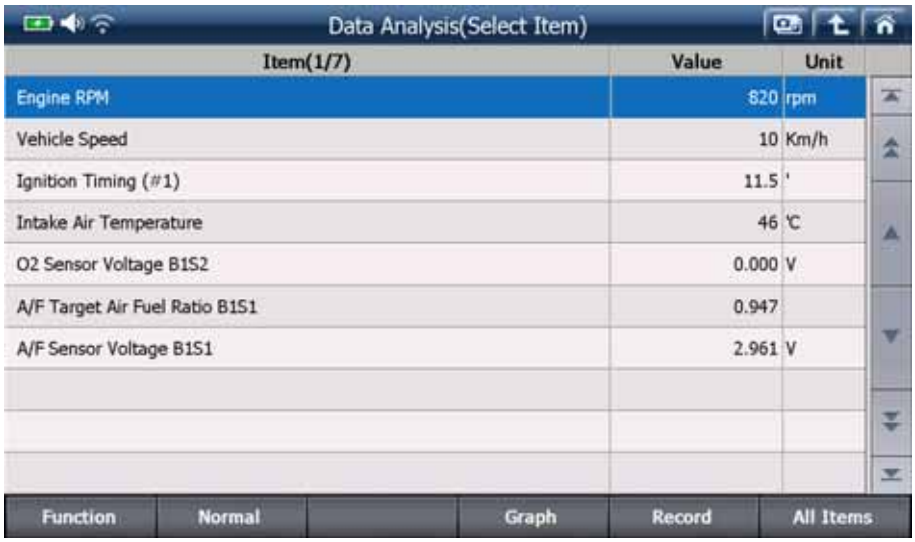
Later model vehicles provide the more parameters, sometimes hundreds of them need to be listed. The parameters are scattered here and there in the data list, and the increased parameters makes it more difficult to check and monitor the related parameters efficiently moving page to page for finding the desired parameters one after another.

B. Select Parameters

Switch to the Details Mode, and select the desired parameters from the data list by ticking on the check box in the head of the parameter names. Select “Selected Items” in the

bottom right corner, then just the selected parameters are listed in the screen as shown below.





As the G-scan2 needs to get the data for the smaller number parameters from the control unit, the data value refreshes at higher rate than showing the all parameters.

C. All Items

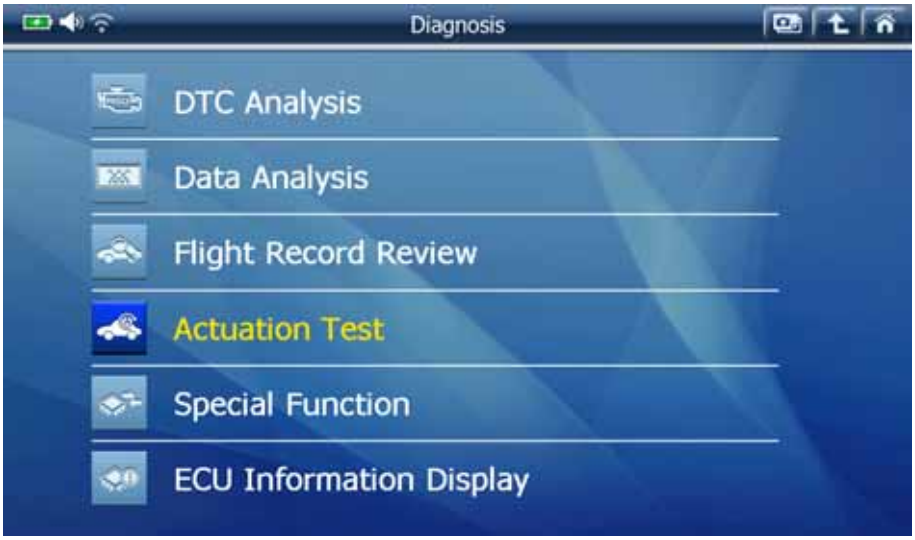
Select “All Items” to return to the full list mode.

3. Flight Record Review

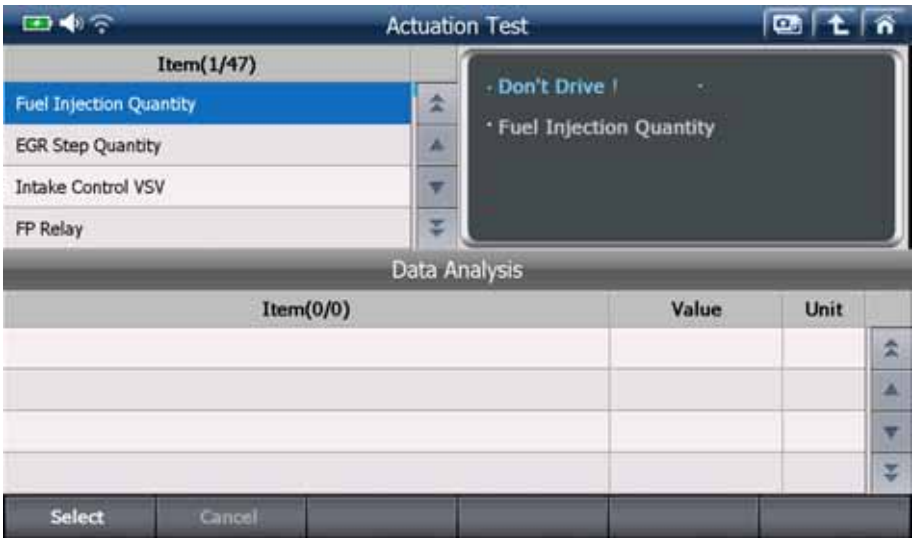
Reviews the recorded data and the function works the same as selecting the “Recorded Data” from the G-scan2 main menu. Please refer to [Chapter 3-2 Recorded Data] in this manual for further details.

4. Actuation Test

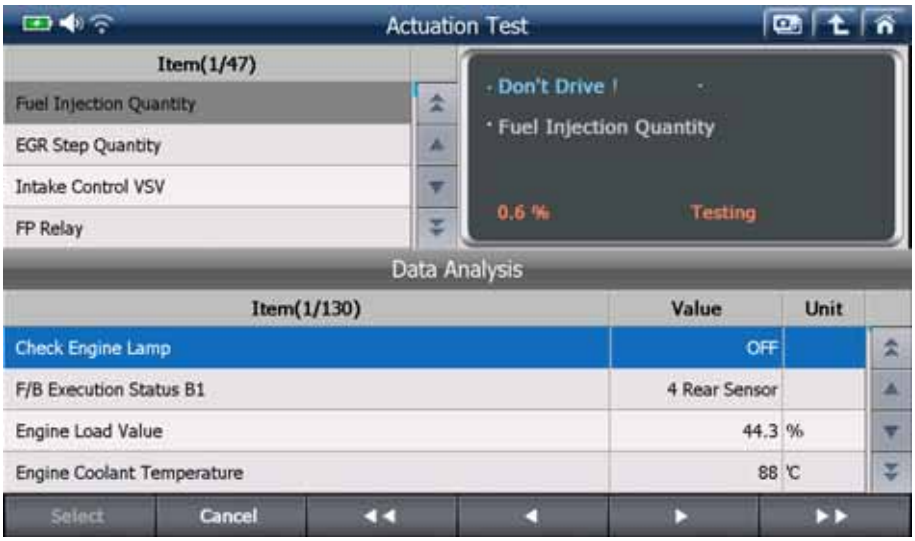
Actuation Test is a function that activates the active parts on the output side of the control unit such as injector, fans and valves, and examines the operation of the active parts and the related circuits.



Select the test item from the upper left window, observe the test conditions described on the upper right window and get the vehicle's condition in compliance then select "Select" button in the bottom or press [F1] key.



Control On/Off or adjust the values up and down using the buttons and keys and check the response of the selected active parts and the vehicle control system's reactions by monitoring the live data provided in the lower half of the screen.



Select the "Cancel" button or press [F2] key to stop the activation test on the selected item.

4-1. Different Items supported

Not all active parts of a control system are supported for this function. The list of the active parts available for the actuation test is predefined by the car manufacturers, therefore different items are supported according to the brands and models.

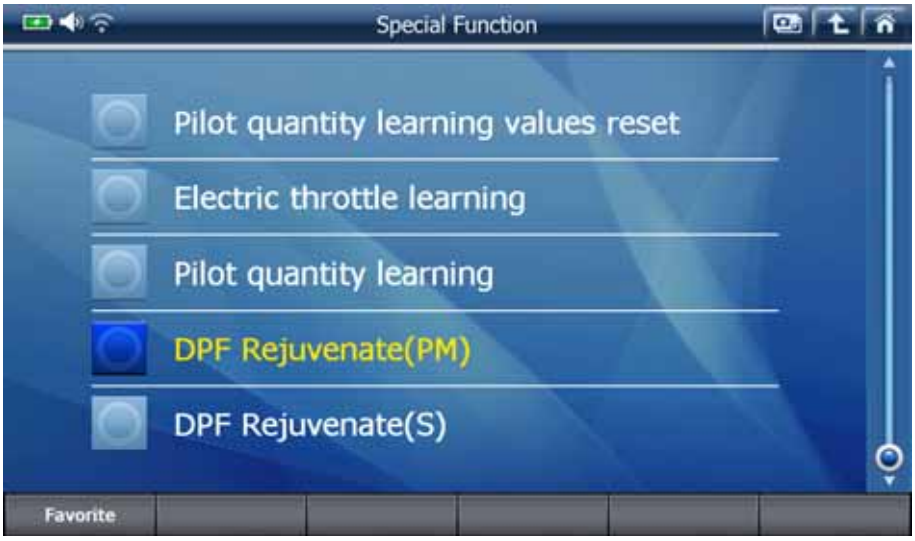
4-2. Test Conditions

Please make sure to observe the test conditions and get the vehicle ready as instructed on the top right window before starting the test, otherwise the function will fail.

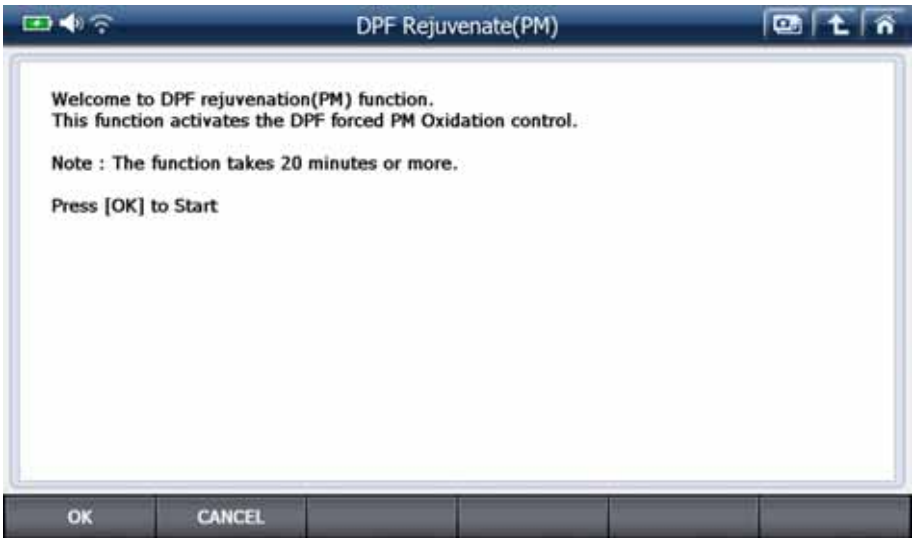
5. Special Function

While DTC Analysis, Data Analysis, Actuation Test and ECU Information functions are considered as basic diagnostic functions that are commonly supported for most of the systems of the major car manufacturers, there are more advanced functions that are required for service and maintenance purposes such as coding, reset, calibration, initialization, adaptation or programming, and these functions are called as Special Functions collectively.

Select “Special Function” from the diagnostic functions menu, then the list of the special functions available for the vehicle follows as shown below:



Find and select the desired special function from the list, read the instruction provided on the screen carefully and select “Start” or press the [F1] key to start.


DPF Rejuvenate(PM)
Welcome to DPF rejuvenation(PM) function.
This function activates the DPF forced PM Oxidation control.
Note : The function takes 20 minutes or more.
Press [OK] to Start
OK
CANCEL

Abort the function by selecting “CANCEL” or pressing the [F2] key.

5-1. Favorite

Please refer to [Chapter 3.6 Favorite] in this manual for more information.

5-2. Different functions supported

The list of the Special Functions available for the selected vehicle is predefined by the car manufacturer, therefore please mind that different special functions are supported according to the brands and models.

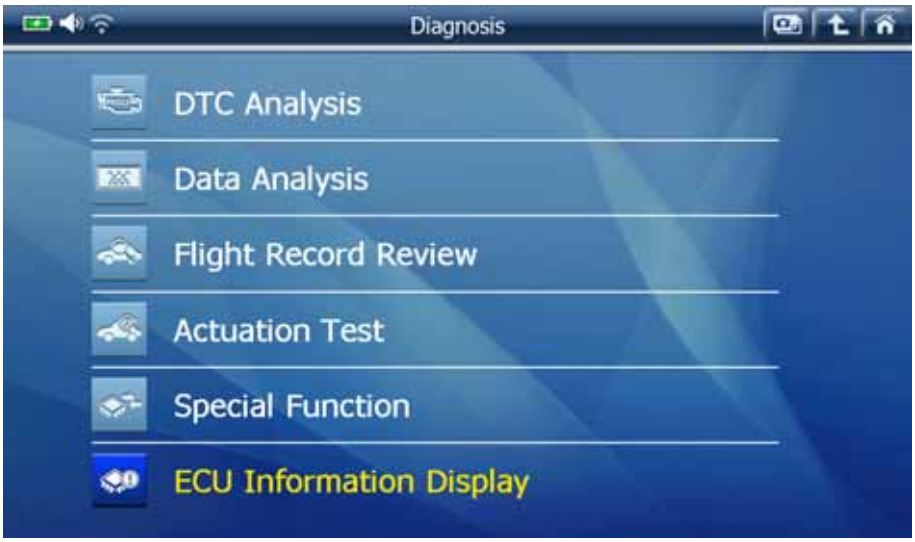
5-3. Test Conditions

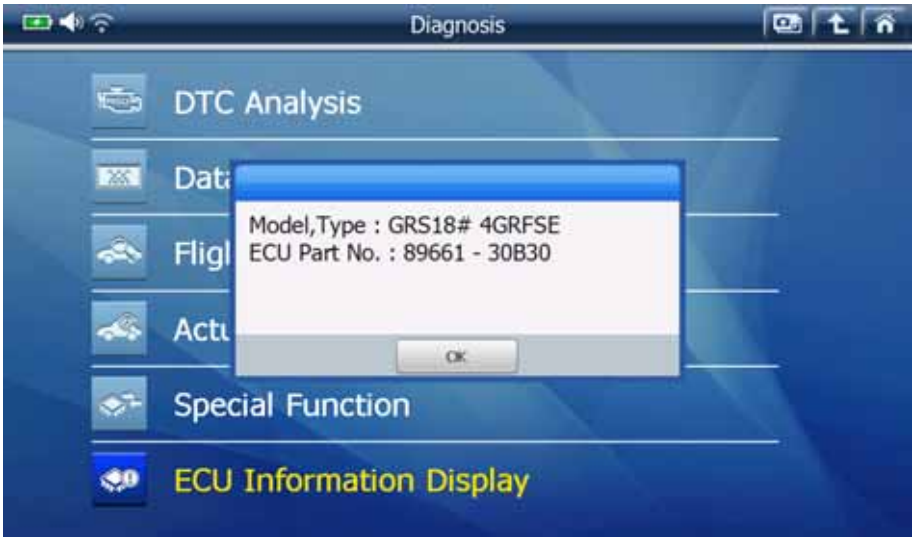
A small unfulfilled condition such as slightly misaligned steering wheel, engine not fully warmed up or released parking brake may lead to the failure of the function, so please make sure to observe the test conditions and get the vehicle ready as instructed on screen before commencing, otherwise the function will fail.

6. ECU Information Display

ECU Part Number and other information needed for identifying the control unit is provided as one of the basic diagnostic functions.

Please mind that the different information is provided according to the car manufacturers and vehicle models.




Diagnosis
DTC Analysis
Dat
Fligl
Actı
Special Function
ECU Information Display
Model,Type : GRS18# 4GRFSE
ECU Part No. : 89661 - 30B30
OK

Maker Selection

Select the car manufacturer from the menu to begin the manufacturer specific diagnosis.

1. All Regions

When “Diagnosis” is selected from the main menu, all the vehicle brands that G-scan2 supports are listed as the first step for car manufacturer selection as shown below.

The brand of the vehicle that the G-scan2 has recently communicated with is placed in the top of the list. By applying this so called “Recent-First” rule, the more frequently serviced vehicle brands are placed in the first 1 or 2 pages of the list, and the rarely used brands are listed in the bottom of the list.

2. Regional Categories

Understanding that it is difficult to find the desired brand name among many dozens of the brand name made of the plain text based buttons, G-scan2 offers the vehicle brands categorized under 4 regional groups to aid the quicker and easier selection.

Select the regional category of the vehicle brand, then list of the car manufacturers of the selected region follows.

1-1. Europe

European cars include Mercedes Benz, BMW ,VAG (Volkswagen, Audi, Seat, Skoda), Renault, Peugeot, Mini, Ford Europe, Opel/Vauxhall, Dacia, Volvo as of June 2013, and the more brands will be added as the development for more European cars gets materialized.

1-2. Asia

Asian brands include Acura, Chery, Chevrolet (Korean), Daihatsu, Fuso, GM Daewoo, Great Wall, Hino, Honda, Hyundai General, Hyundai USA, Infiniti, Isuzu, Kia General, Kia USA, Lexus, Lifan, Mahindra, Maruti, Mazda, Mitsubishi, Nissan, Proton, Speranza, Ssangyong, Subaru, Suzuki, Tata, Toyota and UD (Nissan Truck) as of June 2013.

The more local brands are expected to be added, and the additional category can be added to separate the brands by the countries or by the passenger / commercial vehicle segments.

1-3. United States

US domestic brands such as Chrysler, Dodge, Jeep and Ford USA are included under this regional category as of June 2013.

1-4. Others

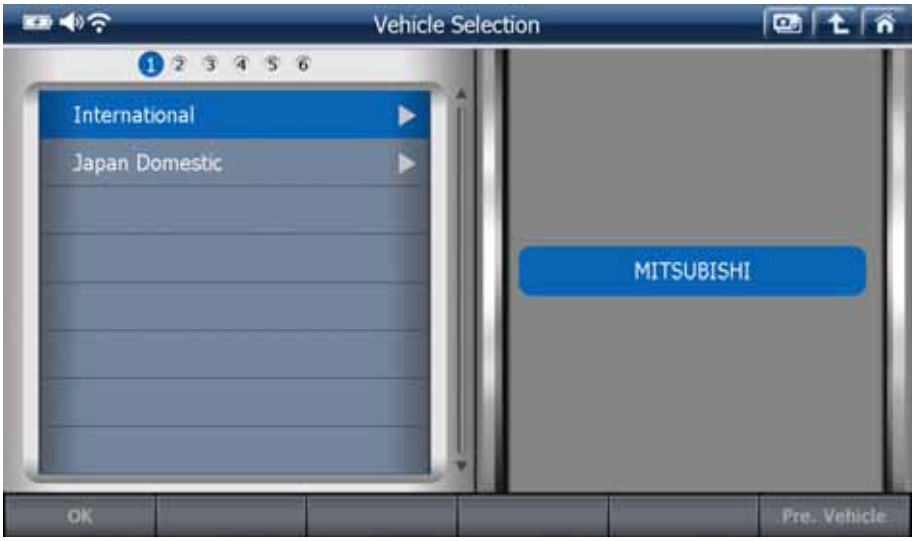
Demo program, or the trial versions that have not been officially released therefore could not be categorized to a specific region are found under this category.

Also, local brands that are supplied to the specific countries exclusively are included under this category, such as Australian Holden and Ford that are exclusively available only for Australia, or Iran Khodro and Saipa that are exclusive for Iran.

Japanese Cars

1. Japan Domestic vs. International

Select any Japanese brand “Toyota”, “Nissan”, “Honda”, “Mitsubishi”, “Mazda”, “Daihatsu” and “Suzuki” from the car maker selection menu, then it is followed by the G-scan2’s unique Japanese car menu structure as shown below.

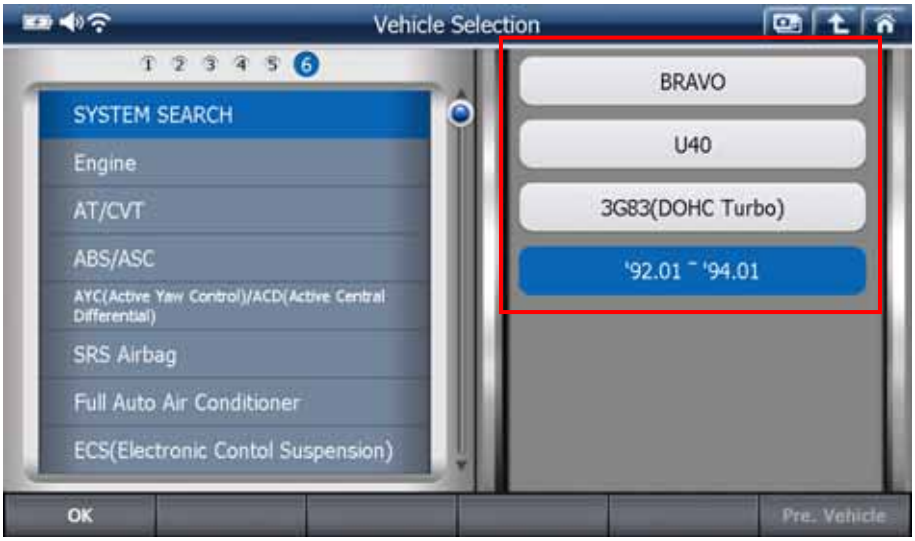


1-1. Japan Domestic

G-scan2's Japanese car software was developed and engineered in Japan by the Japanese engineers, and the database was built as demanded by the Japanese mechanics who prefer pin pointing the vehicle details to get the most specific diagnostic information from the vehicle.
G-scan2 is offering the model names and the detailed model selection procedure to the Japanese users in the conventional way for the cars sold in Japanese domestic market.

Therefore, Japan Domestic is not recommended to the international users.
Select Japan Domestic only when testing the Japanese cars originally sold in Japan and imported as secondhand cars from Japan.

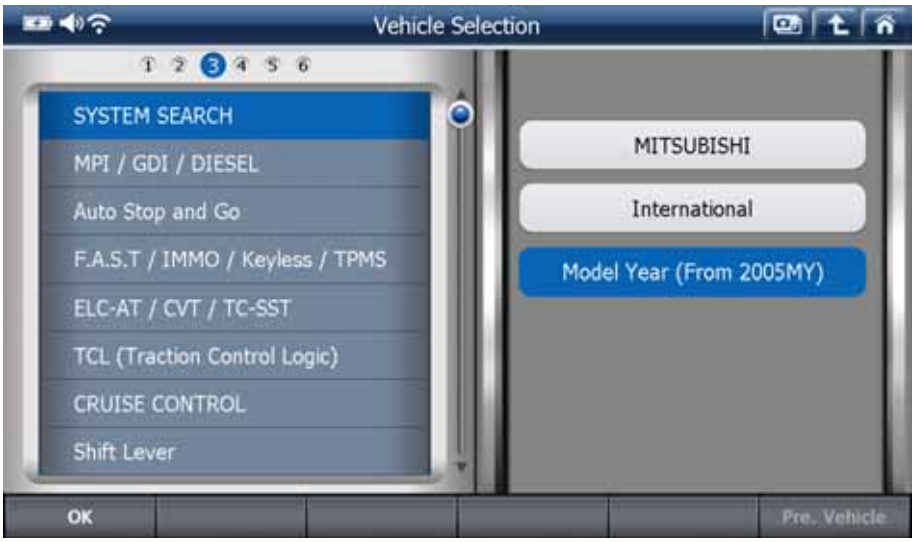
The model names and further details provided under Japan Domestic menu include only the Japanese domestic specs, therefore the export models or foreign local assembly models may not be supported if the compatible models are not sold in Japan.



1-2. International

Japan Domestic menu is conventional therefore maybe more familiar.
However, it is not applicable outside Japan.
In the overseas, the cars are named differently, and there is a huge variety of cars of different versions that are not found in Japan.
International menu was added to include ALL regional versions of each Japanese brand.

Therefore, make sure to select International unless the car is imported from Japan second-hand.



If International is selected, a simple Diagnostic Connector Type selection follows and then the system selection can be made without having to follow further model name, model code, type or model year selections.
It is so simple but it is not providing a simplified function. It provides complete function and diagnostic result of the same level as selecting all the details of the test car in Japan Domestic.

2. System Search

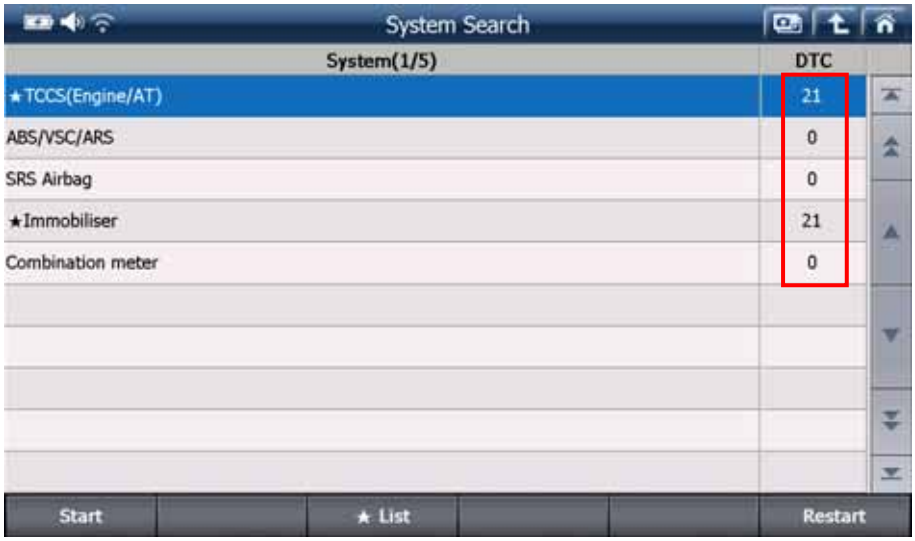
1.1. System Auto Search

For the Japanese cars with the exception of Isuzu, selecting “System Search” from the system selection menu activates the automatic “All Systems Check” procedure.

G-scan2 tries to establish communication with all possible systems fitted in the car one after one, and then provides the summarized report of the diagnostic result on the screen.

1.2. Number of DTC’s

G-scan2 reads the DTCs from the vehicle’s control systems while conducting the system search function, and indicates the number of trouble codes found in each system.



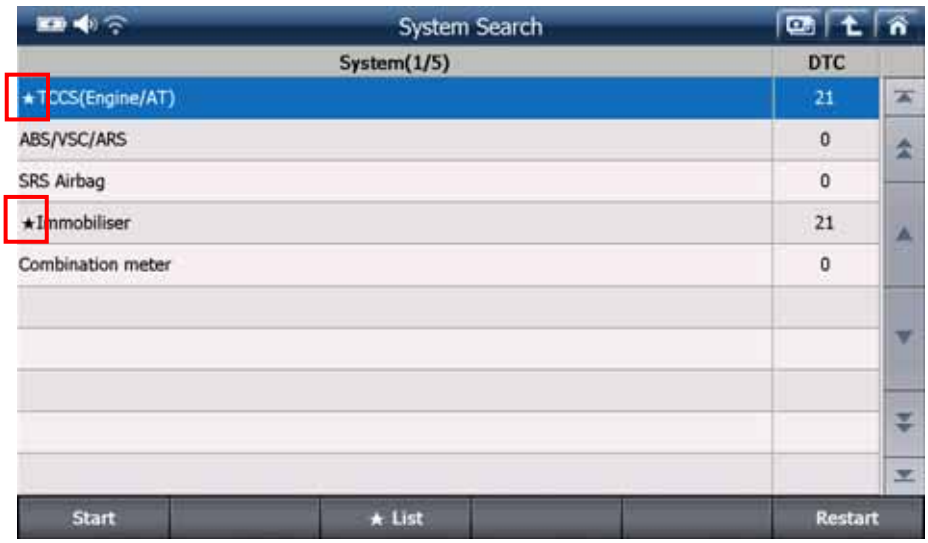
However, some of the control systems such as SRS, IMM or BCM may not support DTC Read and Erase functions. Some control modules may require G-scan2 to communicate with the system individually to read the DTC.

In both cases, G-scan2 is unable to show the number of DTCs in the System Search report, not because of its fault but because the system is designed in that way.
To avoid misunderstanding, G-scan2 indicates such exceptional cases with the " - " and " -> " symbols.

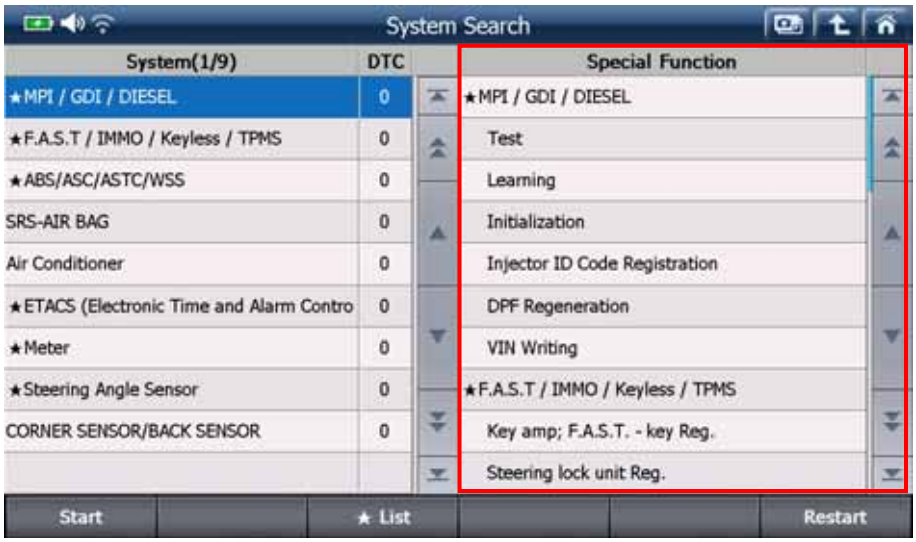
Symbol	Description
-	The system does not support DTC reading function.
->	The system needs to communicate individually. Please select the system from the menu and check the DTC individually.

1.3. Special Functions Availability

Depending on the vehicle, if a detected system supports the "Special functions", then G-scan2 indicates it with the star marks.



Select the ★ List button in the bottom, and the G-scan2 shows the details of the special functions available with the detected systems.



Korean Cars (Hyundai and Kia)

Select “Diagnosis” from the main menu then the Car Maker Selection menu follows.

There are several Hyundai and Kia software versions available and they are:

- **Hyundai General**: Hyundai cars sold worldwide except North America.
- **Hyundai USA**: Hyundai cars sold in North America
- **Kia General**: Kia cars sold worldwide except North America.
- **Kia USA**: Kia cars sold in North America
- **Hyundai and Kia Truck / Bus**: Hyundai and Kia Commercial Vehicles (Trucks and Buses)

Some of these versions may or may not be included in your G-scan2 according to the regional demand

1. Accurate Vehicle Details Selection

Please note that GIT is the original scan tool supplier for Hyundai and Kia, and this aftermarket G-scan2 product is also made precisely based on the original database. It requires accurate model and details selection to be provided with the accurate and reliable diagnostic result.

1.1. Quick Move

The model names of Hyundai / Kia cars are listed in the Alphabetic order.

For a quicker selection, use the Quick Move keypad provided in the lower right corner – simply type in the model name's first alphabet, then the menu will jump to the model names that start with the selected alphabet.

1.2. Model Year

Model year selection is the most delicate part for Hyundai and Kia cars – wrong model year selection may result in communication or diagnostic function failure.
The vehicles that have been produced close to the model changing period may cause confusions. Therefore, if the communication fails with the selected model year, please retry by selecting the different model years of the same model.

Please mind that the model year is decided not by the registration or importation year, but by the production year as indicated on the metal tag or VIN.
The project names and model year information are also provided in the end of each model name, please make sure to make the correct selection.

1.3. Further Details

Select the system, then further vehicle details need to be precisely selected among the applied emission control systems, engine types and sizes, fuel types and other system specifications. Please make sure to make the correct selections for all steps to avoid failure. When all the selections are made, OK button in the bottom left is activated. Please select "OK" button or press the [F1] key to start the communication with the selected system.

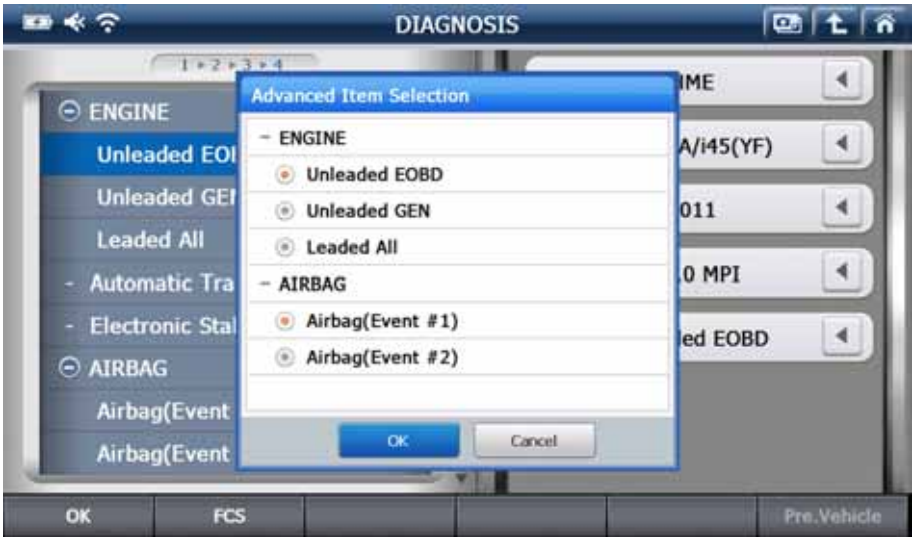
1.4. Pre. Vehicle

G-scan2 remembers the details of the specifications of the last vehicle that it communicated. If you are testing the same vehicle again, simply select the “Pre.Vehicle” then the vehicle details are automatically reloaded.

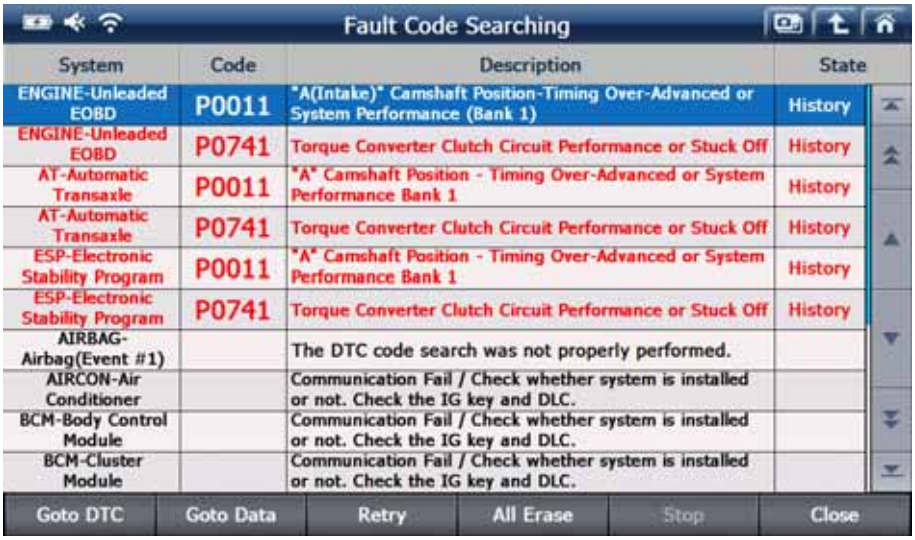
2. FCS (Fault Code Searching)

When the vehicle details are all selected, “FCS” button in the bottom is activated.
Select “FCS” button or press the [F2] key to start the Fault Code Searching function.

Make the selections for the final details of the vehicle’s systems so that G-scan2 start communicating with the systems in the vehicle.



G-scan2 tries to establish communication with all possible systems in the vehicle one after one, and then reports the basic diagnostic result as shown below

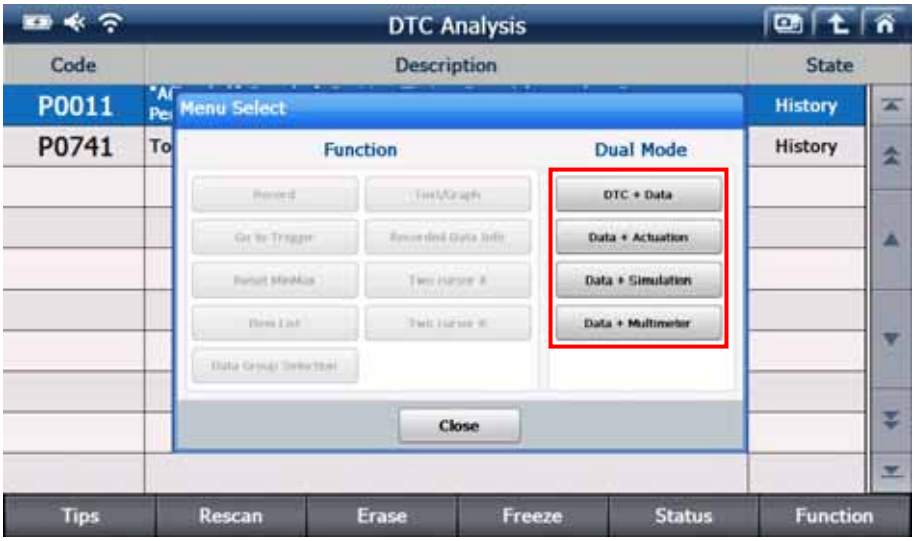


Button	Description
Goto DTC	Goes to the DTC Analysis function of the selected system
Goto Data	Goes to the Data Analysis function of the selected system
Retry	Restarts the Fault Code Search function
All Erase	Erases all the diagnostic trouble codes found
Stop	Aborts the Fault Code Searching while the function is running
Close	Quits the FCS function and returns to the system selection menu.

3. Dual Mode

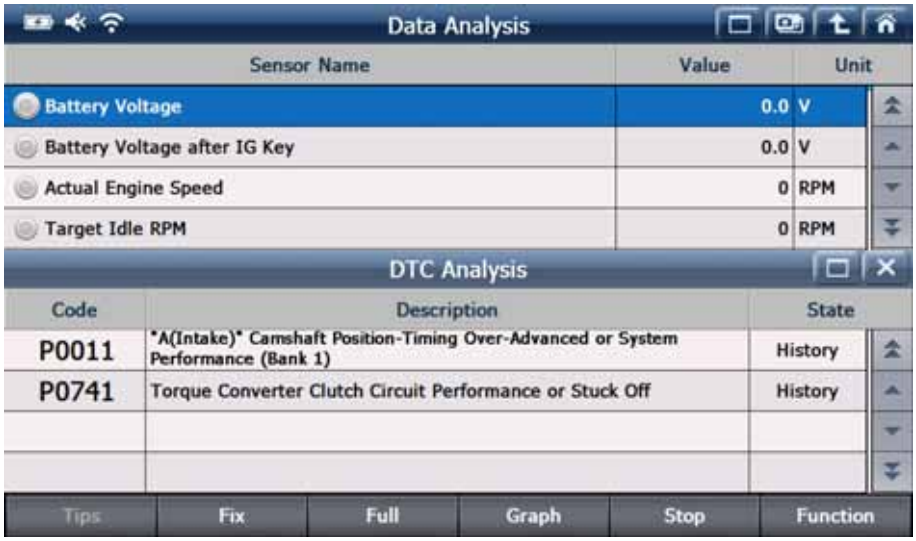
Hyundai and Kia software of G-scan2 supports dual mode where the 2 of the diagnostic functions are executed and displayed simultaneously.

Select “Function” or press the [F6] key from the DTC Analysis or Data Analysis function’s diagnostic result display as shown below.



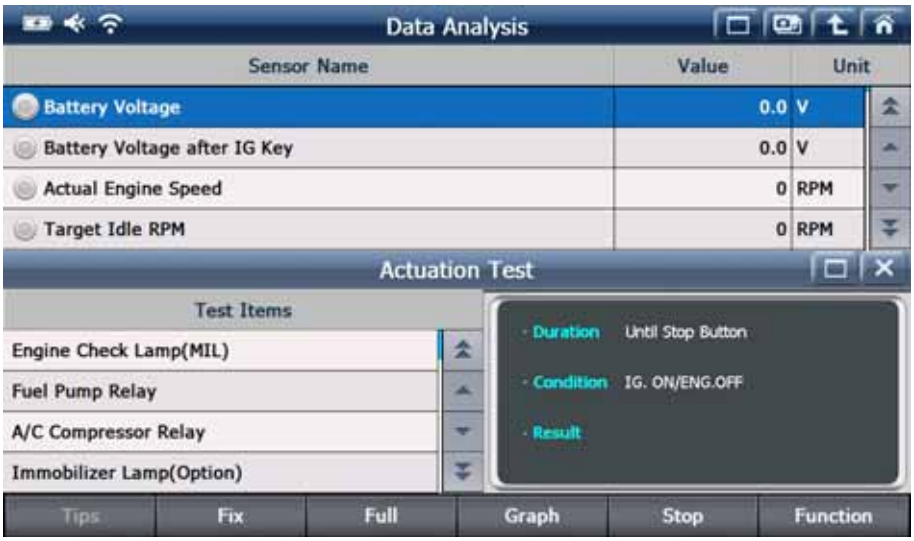
3.1. DTC + Data

G-scan2 displays the DTC Analysis and Data Analysis functions simultaneously.



3.2. Data + Actuation

G-scan2 executes the Actuation Test function while showing the Data Analysis parameters at the same time.

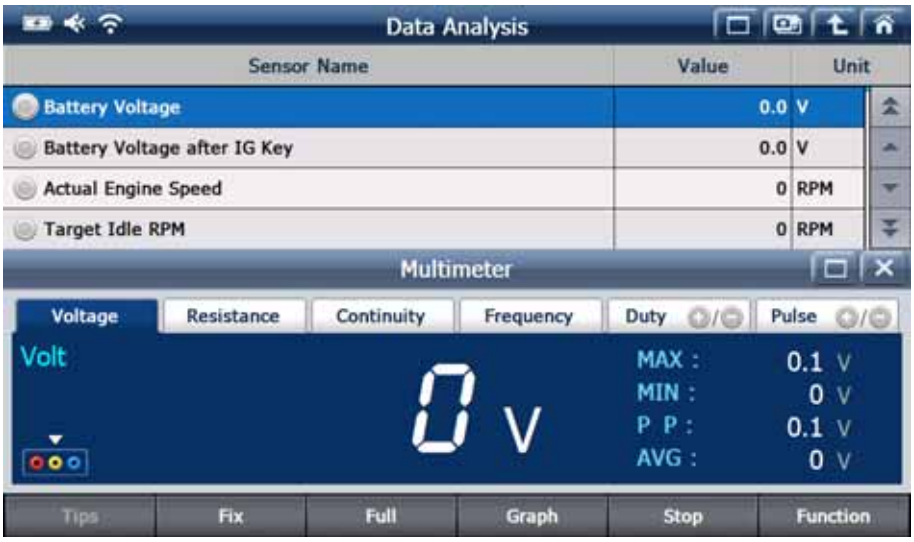


3.3. Data + Simulator

G-scan2 conducts the Measurement function's simulation function that sends out the electric signal to the sensor / actuator wire while showing the Data Analysis function's data list simultaneously.

3.4. Data + Multimeter

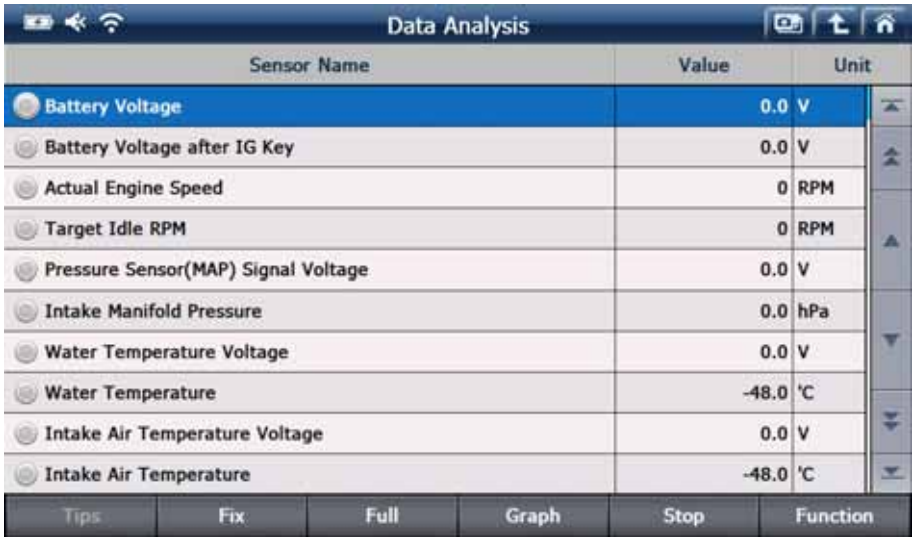
G-scan2 shows the actual multi-meter readings using its measurement function and displays the data values received from the control unit using the Data Analysis function enabling the direct comparison between the actual reading and the data processed by the control unit.

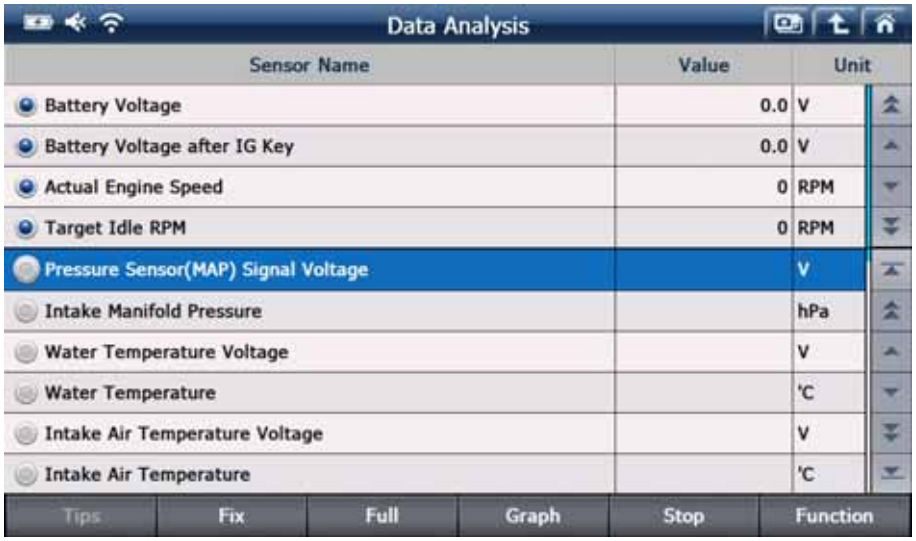


4. Data Record (trigger mode)

4.1. Parameter Selection

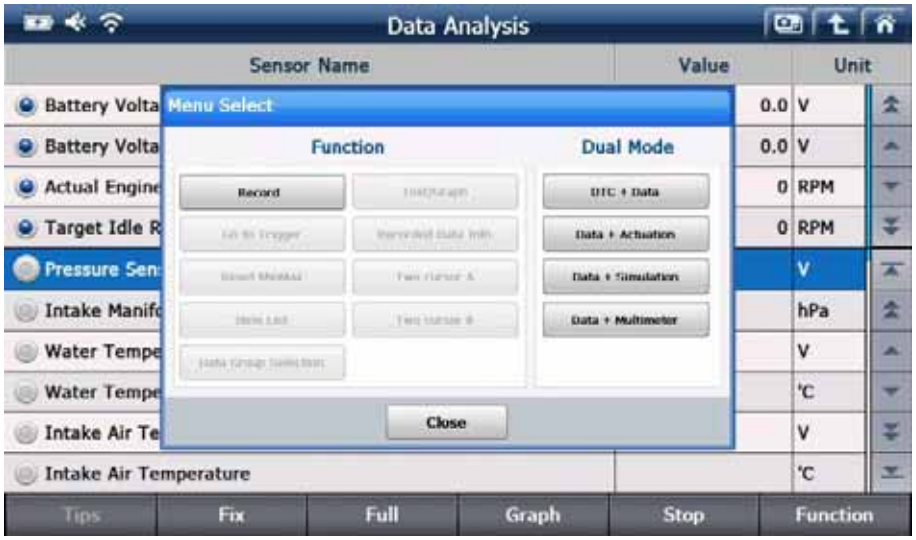
For recording the data list in Data Analysis, one or more parameter needs to be selected by ticking on the buttons in the head of the parameter names.





4.2. Data Recording

Select “Function” or press the [F6] key from the Data List display, then select [Record] button among the functions list.

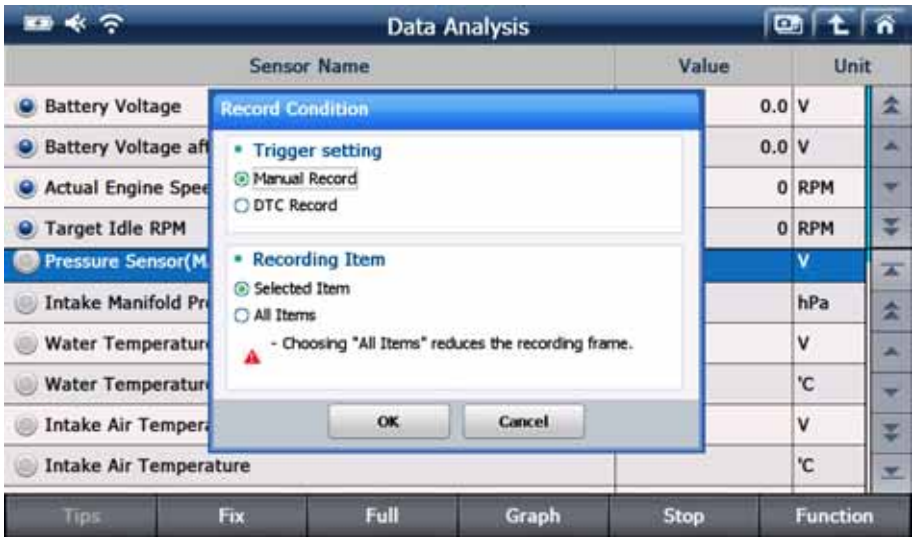


4.3. Trigger Mode

Select Trigger Mode either Manual Record or DTC Record.

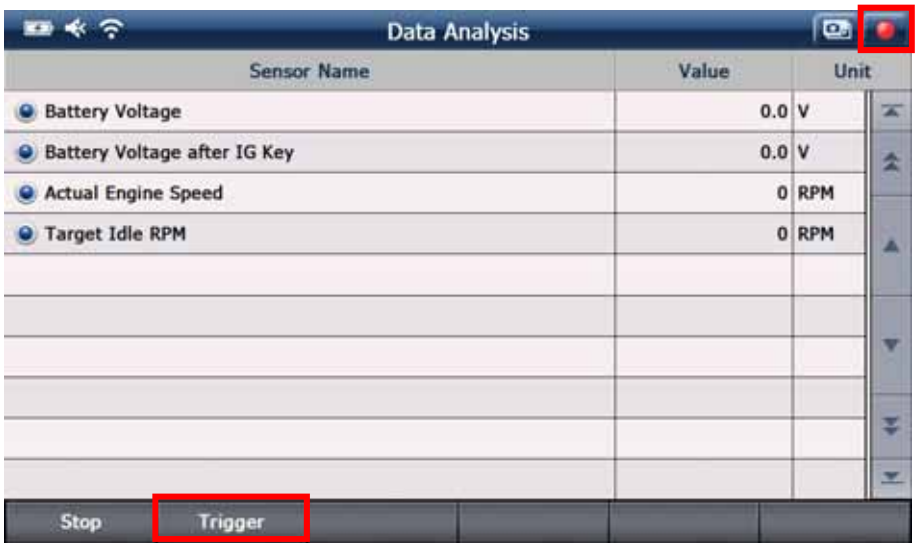
Button	Description
Manual Record	Trigger point is recorded when the “Trigger” button is manually selected by the user.
DTC Record	Trigger point is recorded automatically when the G-scan2 reads the DTC from the control unit.

In the same dialog window, the range of the recorded parameters can be selected either “Selected Items” or “All items”.



Please note that selecting All Items will consume more memories, therefore will reduce the number of recordable frames with the given memory size.

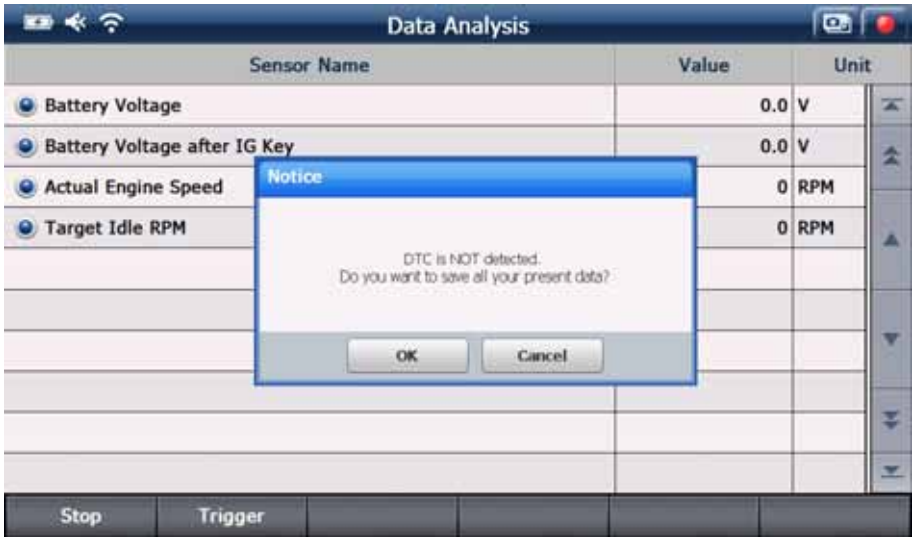
When OK is selected, the Data Recording will start. Check the red dot “Record” sign in the top right corner.



If Manual Trigger is selected, select “Trigger” button, or press [F2] key, to trigger the data recording manually.

If DTC Trigger is selected, the trigger is recorded automatically when the DTC is detected. If no DTC is detected while recording, select either save the recorded data anyway or cancel

and retry.



4.4. Recorded Data Review

Recorded Data can be reviewed by Flight Record Review function.

Select the file and press “Run” button or “F1” key to load the recorded data.

The recorded data can be played forward and reverse using the record player control buttons in the bottom or the relevant F1~F4 keys.

Select the “Function” button or press the F6 key to open the additional control functions menu

A. Text/Graph

Toggles the display mode among Text mode and Graphic mode.

B. Go to Trigger

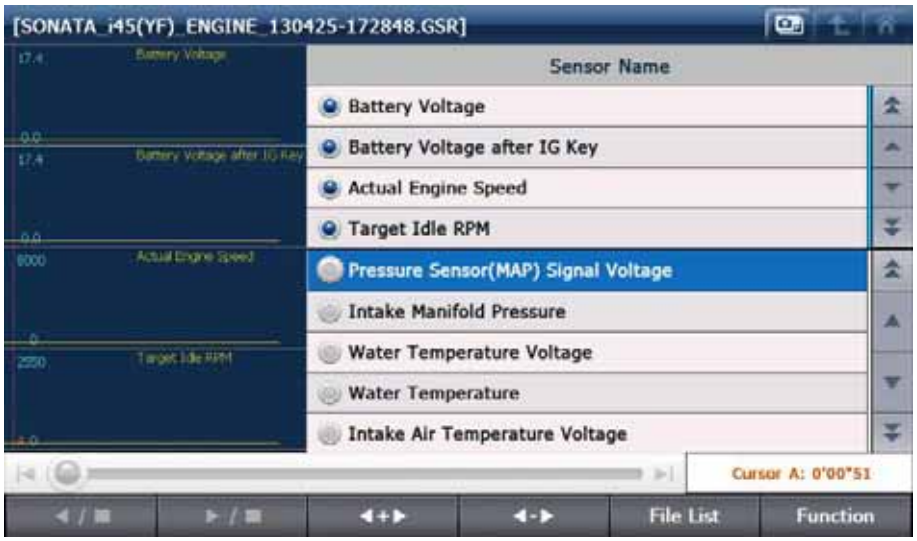
Moves the cursor A to the trigger point.

C. Recorded Data Info

Shows the details of the Recorded Data file currently being displayed.

D. Item List

G-scan2 Flight Record Review function for Hyundai and Kia may show up to 4 parameters at a time. If you have recorded more than 4 parameters and want to select the other parameters to be displayed in the graphical forms, you may select the desired parameters from the “Sensor Name” list as shown below.



E. Two Cursor A

Cursor A is a vertical red dot line, and the parameter values at the time of the cursor point are indicated on the right side of the screen.

Also the elapsed time from the start point to the cursor position is indicated in the bottom right corner.

F. Two Cursor B

Trigger B is activated and appears as the vertical green dot line as shown below.

The minimum and maximum values between the positions of Cursor A and B are indicated in the right side of the screen.

Also the time difference between the cursor A and B is indicated in the bottom right corner.

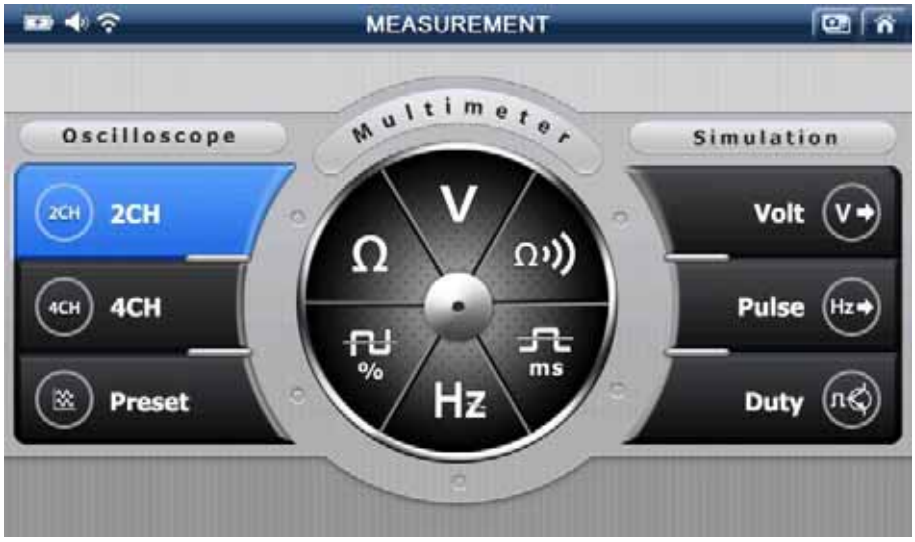
[SONATA_i45(YF)_ENGINE_130425-172848.GSR]
6000
Actual Engine Speed
0
Fuel Pump Relay
Max : 3106
824RPM
Min : 824
Max : ON
ON
Min : ON
Cursor A: 2'34"21
File List
Function

3.5. Measurement

Measurement Function

Utilizing the VMI(Vehicle Measurement Interface) module. G-scan2 provides oscilloscope, multi-meter and simulation functions that are used for measuring the electric signals from the wire directly.

Select the [Measurement] icon from the main menu to run the Measurement Functions, then the Measurement Menu follows as below.



Oscilloscope Function

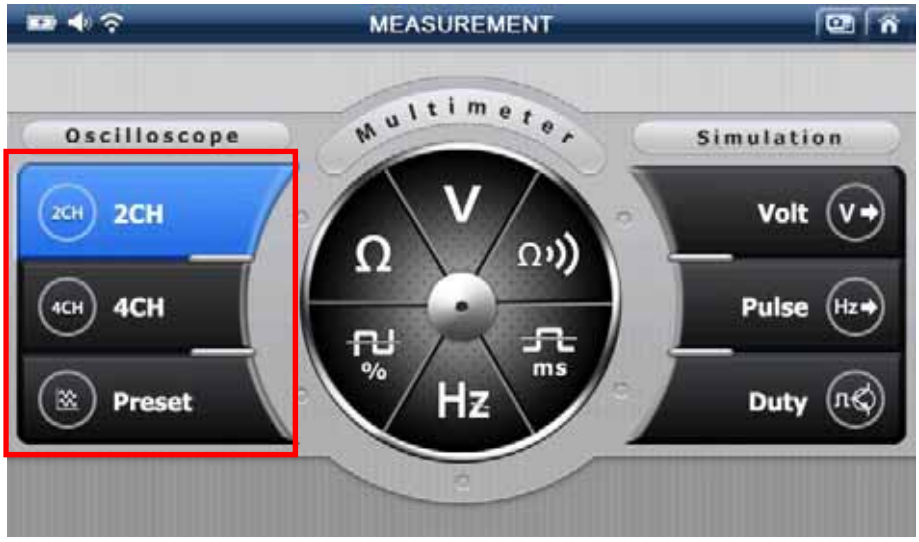
Measures the voltage or amperage fluctuations of the vehicle's sensor or actuator circuits in rapid repetition and visualizes the signals in the graphic waveforms.
Measurement of cylinder compression is also possible by the use of optional pressure sensor.

The signal input ports of G-scan2 VMI module are assigned to specific measurement functions, so please refer to the following table.

Measurement Function	Assigned Signal Port
Oscilloscope Voltage Waveform	CH A (Red) and CHB (Yellow) ports
Oscilloscope Current (Ampere) Waveform	CH Aux (Blue) port
Compression Pattern	CH B port
Multi-meter Functions	CH B port
Simulation Functions	Voltage Output: CH B port Pulse Output: CH B port Actuator Control: CH A port

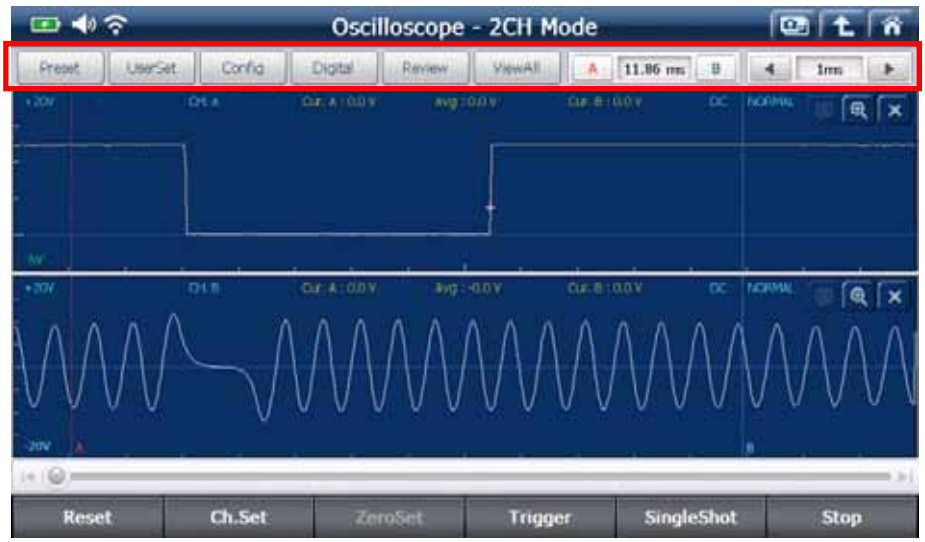
* Please note that the Current Clamps for small and large amperage measurement and the pressure sensors are supplied as optional supplies.

Select the 2CH, 4CH or Preset buttons to run the Oscilloscope function.



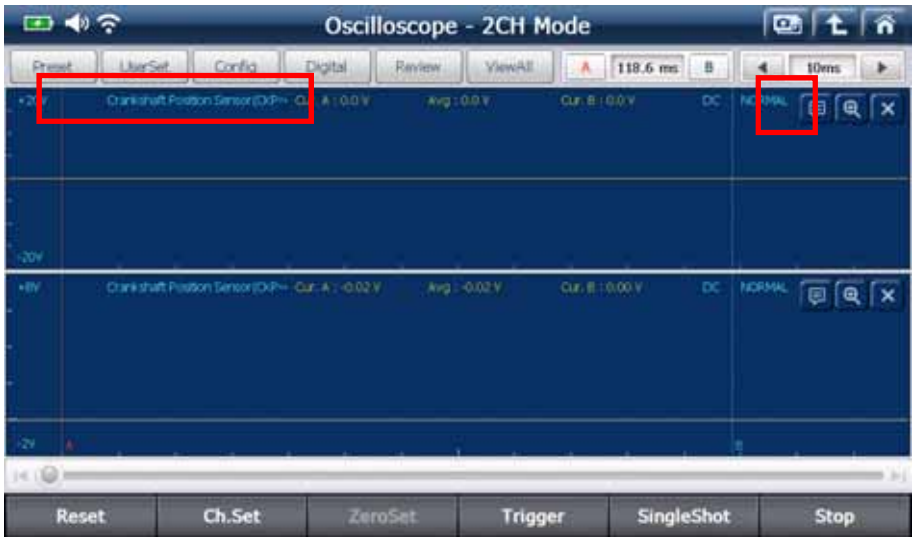
1. Oscilloscope Upper Section Control Menu

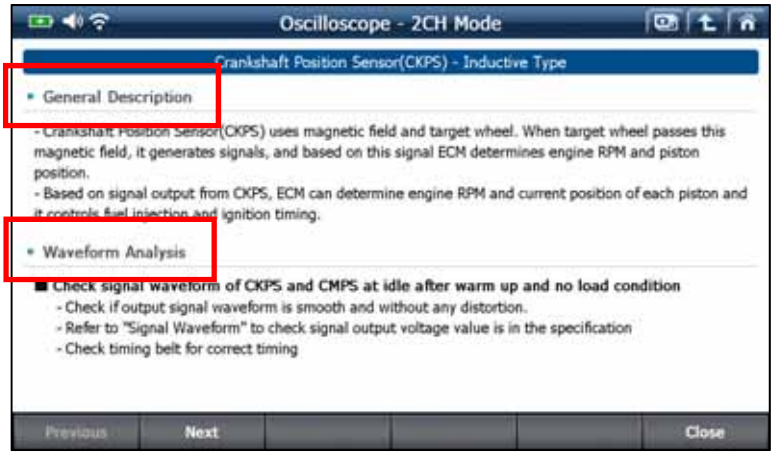
When [2CH] is selected from the Measurement Functions menu, the Oscilloscope function runs in 2 Channel mode as shown below.

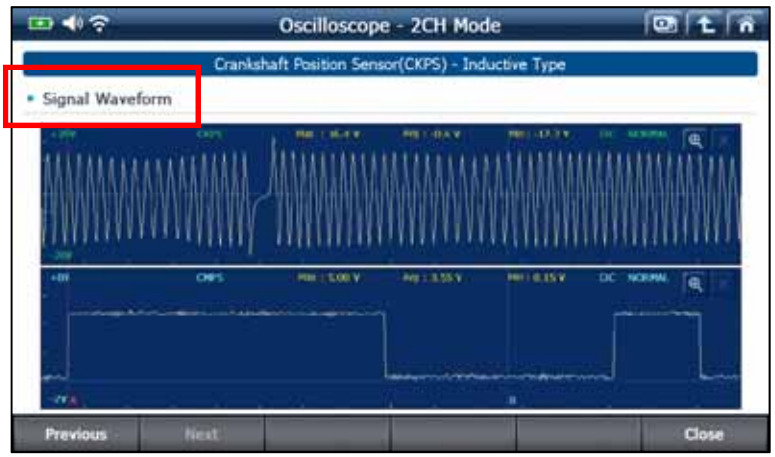


Preset : The sensors and actuators of Engine and Transmission that are frequently used are listed and the optimal voltage and time division setting are provided for each item as the preset values. Simply select the sensor or actuator name from the list and no manual voltage and time division level adjustment is necessary.

The [Help Tip] icon is activated when the item is selected from the [Preset] menu, where the general description about the selected sensor/actuator as well as the waveform analysis guide and the reference waveform are provided.




Oscilloscope - 2CH Mode
Crankshaft Position Sensor(CKPS) - Inductive Type
General Description
- Crankshaft Position Sensor(CKPS) uses magnetic field and target wheel. When target wheel passes this magnetic field, it generates signals, and based on this signal ECM determines engine RPM and piston position.
- Based on signal output from CKPS, ECM can determine engine RPM and current position of each piston and it controls fuel injection and ignition timing.
Waveform Analysis
■ Check signal waveform of CKPS and CMPS at idle after warm up and no load condition
- Check if output signal waveform is smooth and without any distortion.
- Refer to "Signal Waveform" to check signal output voltage value is in the specification
- Check timing belt for correct timing
Previous
Next
Close



UserSet : Opens the User Setting menu where the Channel, Threshold and Display settings can be configured manually.

A. Channel Configuration

Saves the user's current oscilloscope time and voltage settings.

The saved settings can be retrieved from the menu, which enables the oscilloscope setting procedure quick and simple when measuring the same sensor again later.

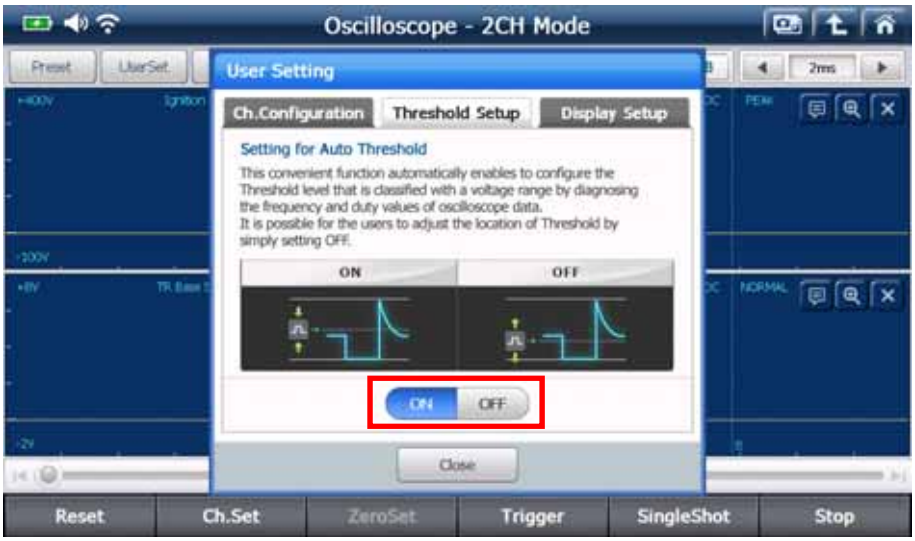
Input the file name as well as the description about the file and the details of the channels for future reference using the on-screen virtual keypad.

B. Threshold Setup

Threshold level which is used as the reference for measuring the frequency and duty cycle can selected among "50%" or "Manual" setup.

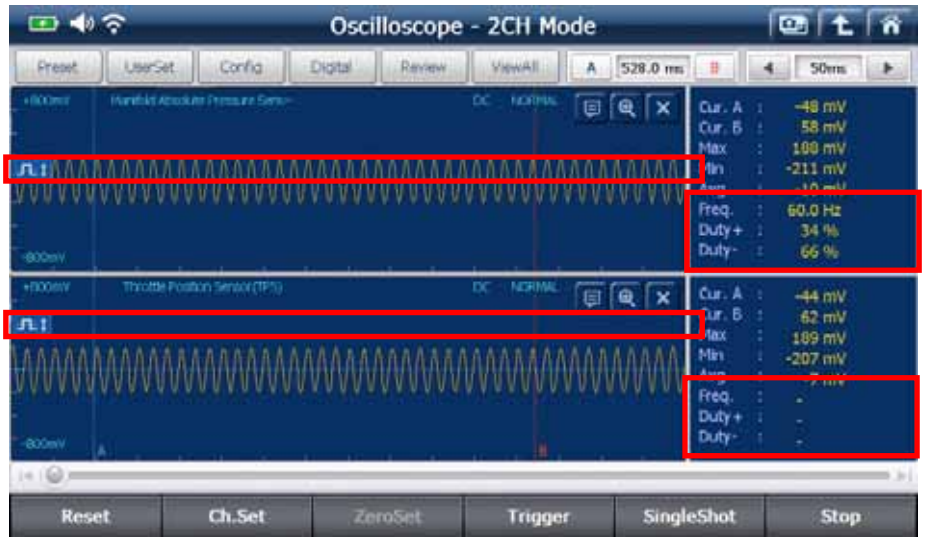
If 'Threshold Setup' is set to "ON", G-scan2 measures the frequency and duty cycle with the threshold level at the 50% of the Y axis value.

If the frequency or duty cycle is not properly measured, in such cases as measuring the Main Duty Solenoid of some LPG vehicles, the threshold level needs to be manually adjusted. In this case, set "Threshold Setup" to "OFF" then shift the threshold level as needed.



In the examples below, the same waveforms are displayed in both Channel A and B, however, please note that no frequency and duty readings are indicated in the Channel B, because the threshold level is set out of the range of the Channel B signal.

Threshold level needs to be positioned within the signal range in order to measure the frequency and duty cycle.



C. Display Setup

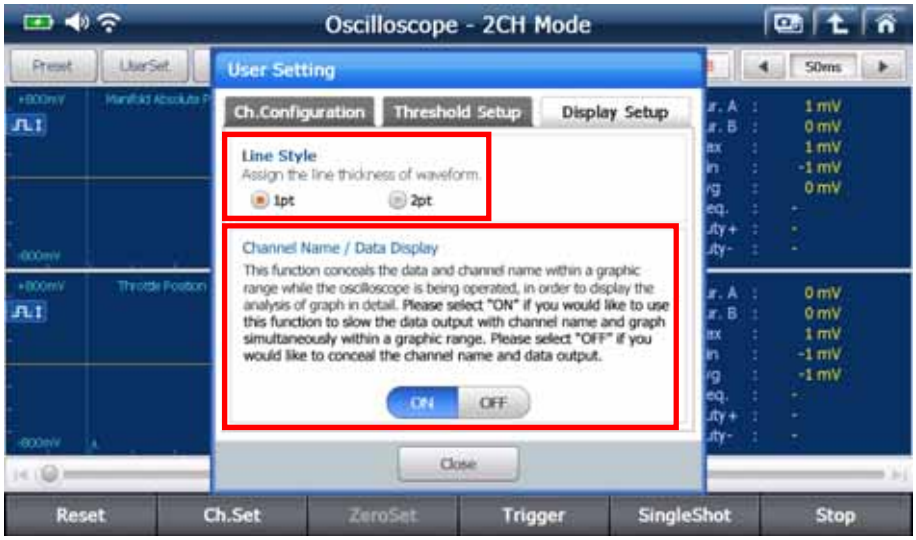
Signal line thickness and the channel name / measurement readout indication settings can be configured.

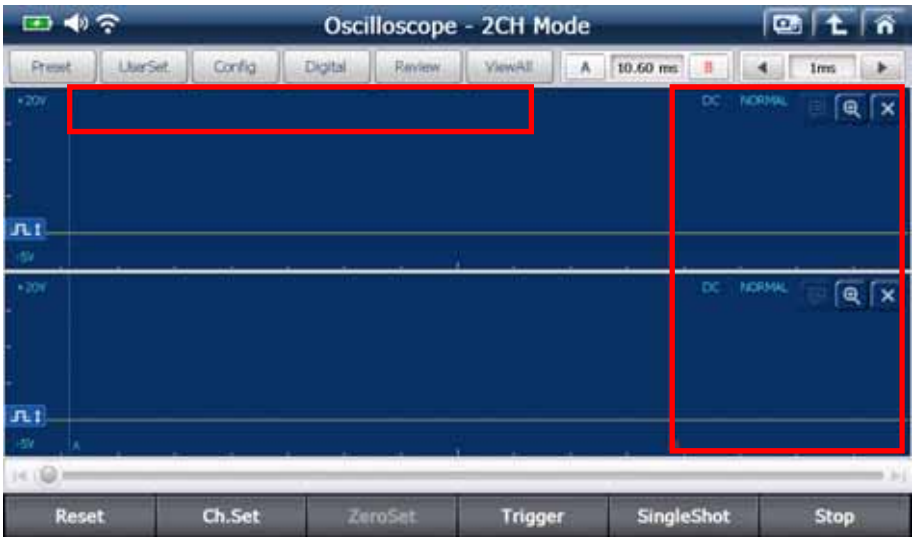
Line Thickness

Thickness of waveform lines can be selected among 1 point and 2 points.

Channel Name / Measurement Readout

Channel name indication in the top of each channel window and the measurement readouts in the right side of the screen can be toggled ON or OFF.


Oscilloscope - 2CH Mode
User Setting
Ch.Configuration
Threshold Setup
Display Setup
Line Style
Assign the line thickness of waveform.
1pt
2pt
Channel Name / Data Display
This function conceals the data and channel name within a graphic range while the oscilloscope is being operated, in order to display the analysis of graph in detail. Please select "ON" if you would like to use this function to slow the data output with channel name and graph simultaneously within a graphic range. Please select "OFF" if you would like to conceal the channel name and data output.
ON
OFF
Close
Reset
Ch.Set
ZeroSet
Trigger
SingleShot
Stop

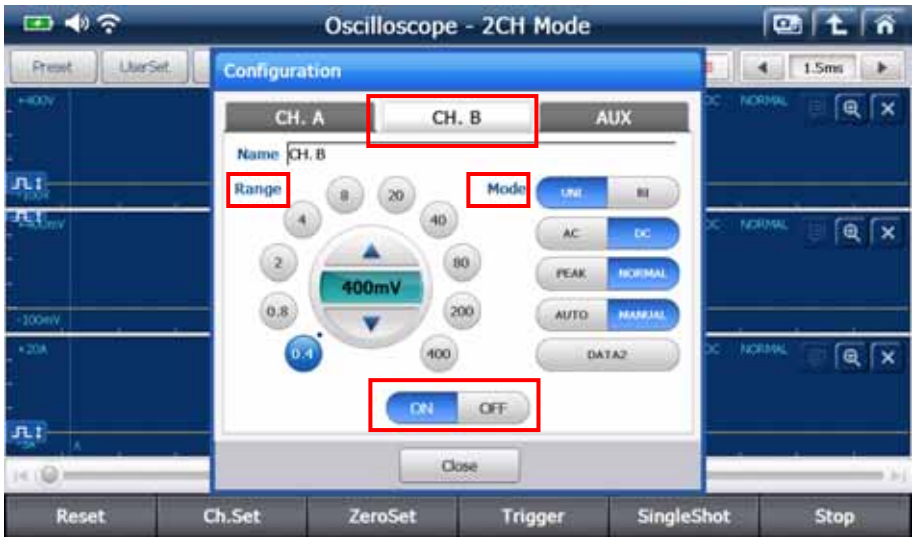


[Channel Name and Measurement Readout turned OFF]

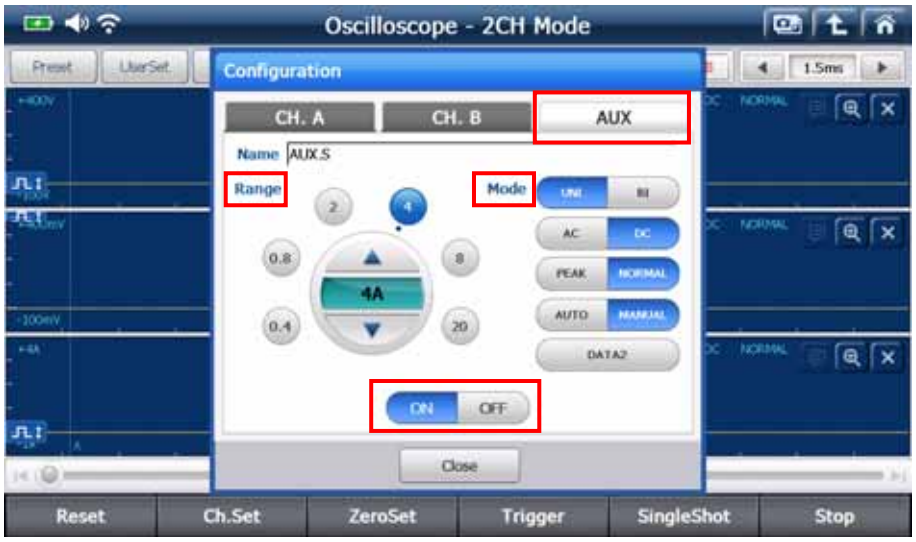
Config : Changes the settings for each channel.

You can enable or disable the individual channel, and also change the signal range and the settings for each channel.

[Configuration for Channel A]



[Configuration for Channel B]



[Configuration for AUX]

Configuration Modes	Description
UNI	Centered by 0 level, the waveform is displayed in both (+) and (-) fields.
BI	Centered by 0 level, the waveform is displayed in (+) field only.
AC	Used for measuring the AC voltages (ex. Alternator Diode ripple voltage)
DC	Used for measuring the DC voltage
Peak	Senses and displays the surge voltages when measuring the parts that include the coil, i.e. Ignition coil, Injector and solenoid valves
Normal	Displays the signal according to the sampling speed as configured.
Auto	Automatically adjusts the signal level and displays in UNI mode according to the input signal
Manual	Signal level can be adjusted manually

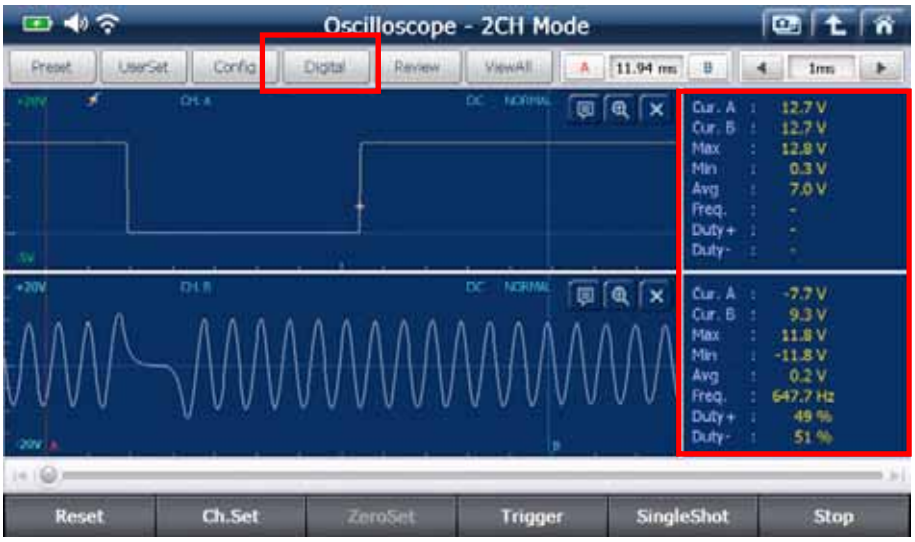
Data 1, 2, 3: Selects among the 3 groups of measurement readouts are indicated in the top of each channel window.

Data 1: Frequency, Duty + and Duty -

Data 2: Cursor A, Average and Cursor B

Data 3: Max, Average and Min

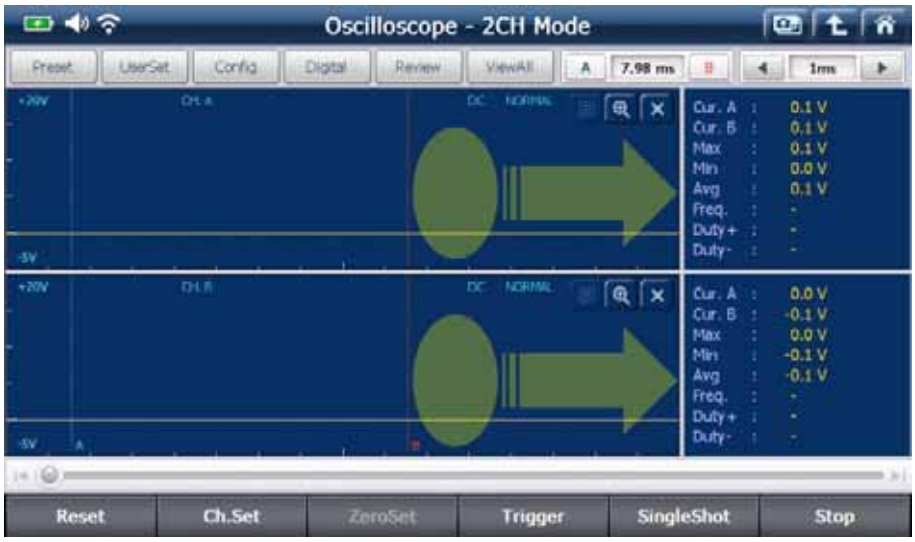
Digital : Toggles the digital readings On/Off in the right side of the screen.



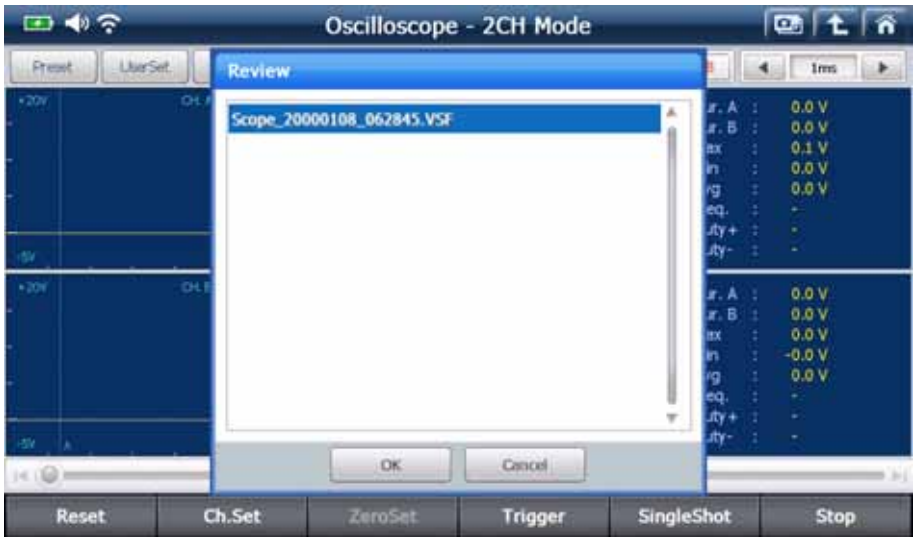
■ Easier way to activate the “Digital Reading”

Touch the yellow circle area on the screen and drag it to the left. Then the digital reading window will be dragged out from the end of the screen.

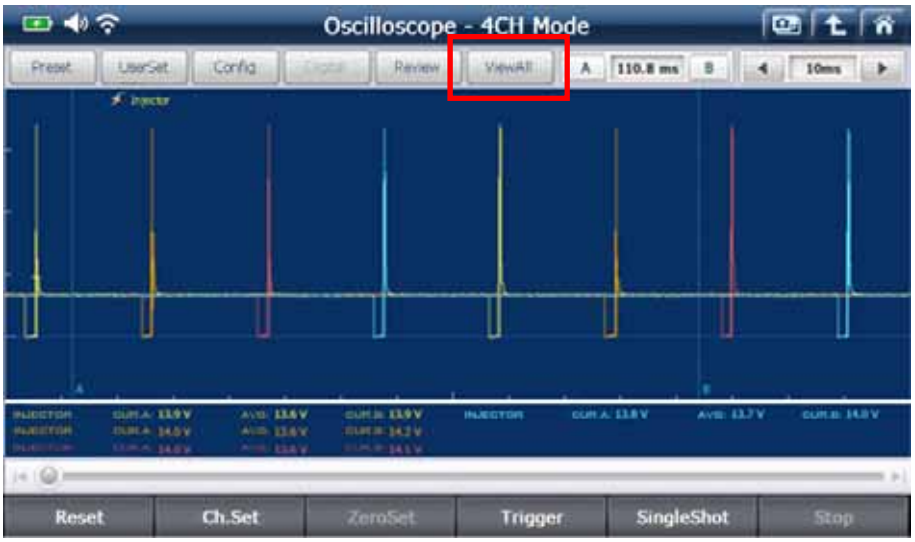
Reversely, you can hide the digital readings by touching the center area where marked with yellow circles, then drag it to the right.



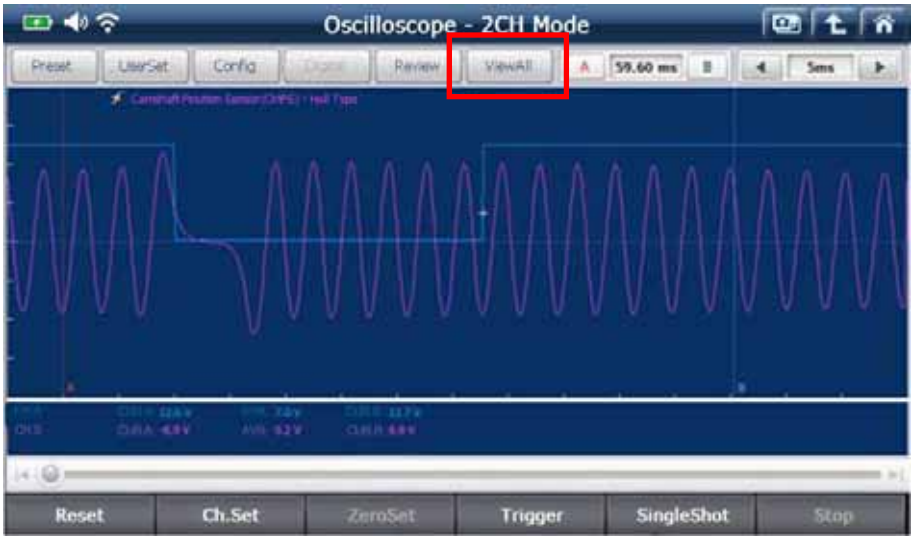
Review : Saved oscilloscope waveforms can be selected and reviewed..



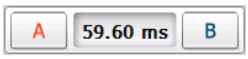
ViewAll : Shows the signals of all channels overlapped on the single window which is useful for checking the missing signal or synchronization of the signals.



[View All Channels - Injector Synch]



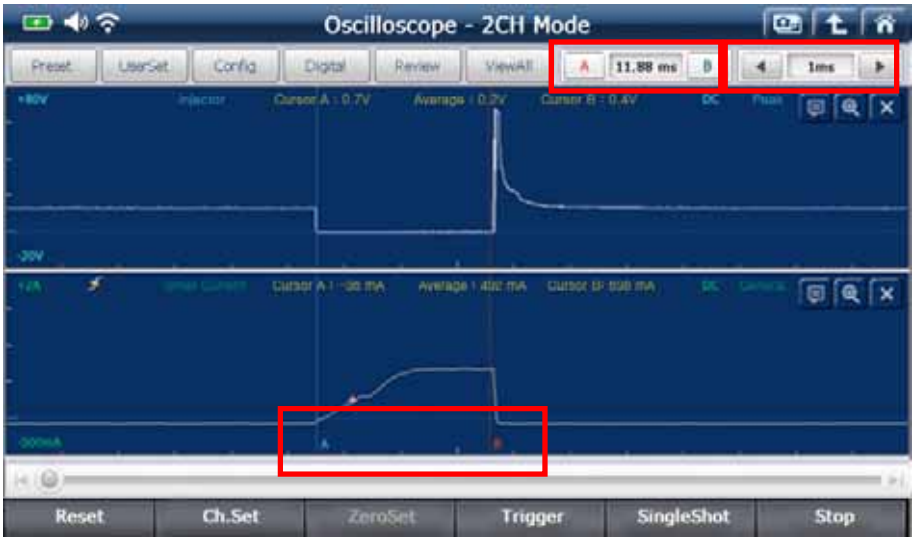
[View All Channels - CMP+CKP Synch]



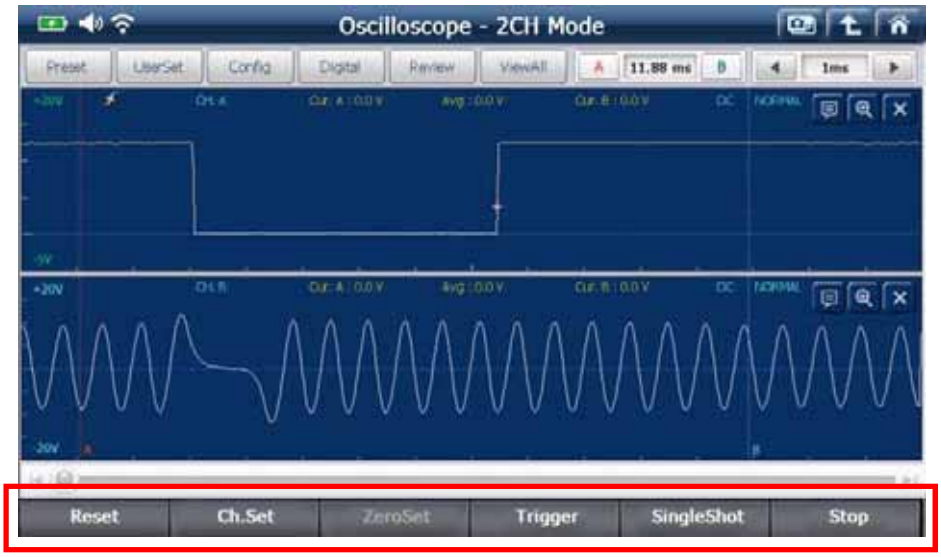
: Indicates the time difference between cursor A and cursor B

Press ‘A’ or ‘B’ button, then the selected cursor is indicated by turning to red, and the selected cursor can be moved by touching the desired position on the screen.

: Time division can be adjusted by using the left-right buttons.

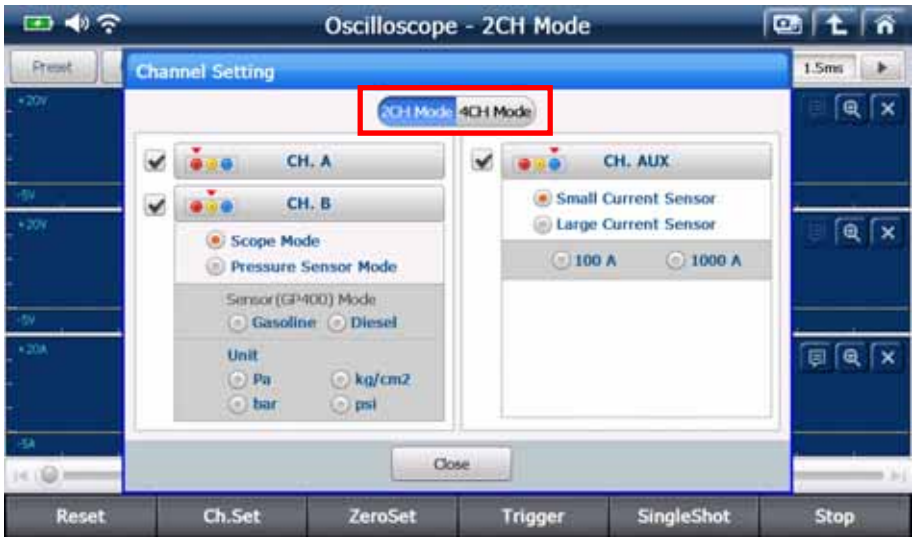


2. Oscilloscope Lower Section Control Menu

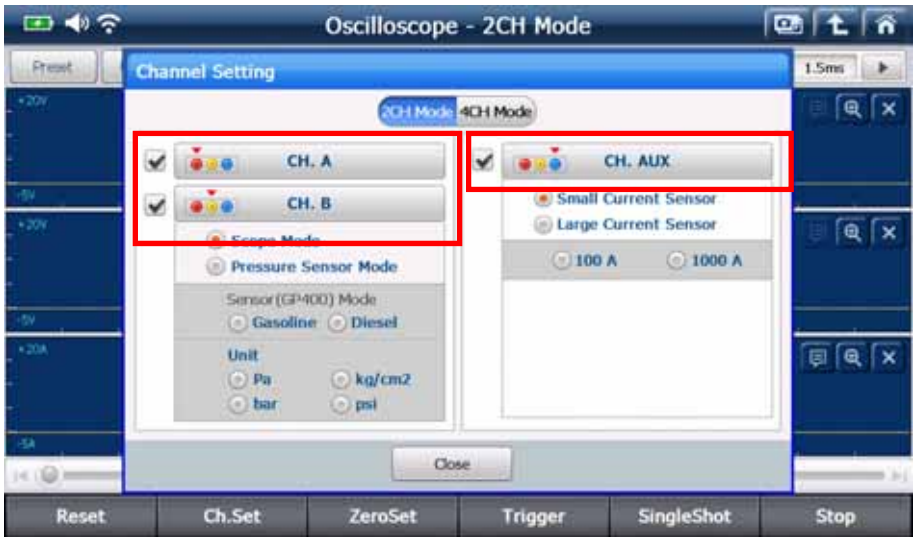


Reset : Cancels the current settings and refreshes the screen.

Ch.Set : Switches to 2 Channel or 4 channel mode.



In 2 Channel mode, Channel B can be switched to the scope mode or the pressure sensor mode.



[Channel Setting – 2CH + AUX mode]

For both 2 CH and 4 CH modes, Channel Aux can be configured for Amperage measurement by selecting the small or large current sensor.

[Channel Setting – 4CH + AUX mode]

ZeroSet : Performs zero setting for resistance, small and large current and pressure measurement.

Trigger : Sets the trigger in 3 modes: Rise, Fall and no trigger.

[Note] "Trigger" is originated from the crossbow or gun's trigger, which holds the passing waveforms still for a short time when the trigger condition is met.

SingleShot : Holds the waveform display still when the trigger condition is met until released by the user, which is useful when measuring the fast and non-recurrent events in such cases as TPS + O2 sensor, AFS + TPS or battery voltage when cranking.

Stop : Holds the displaying the waveform. .

Waveform can be processed for closer analysis or saved for future review.

Multi-meter Function

G-scan2 provides digital meter function through the VMI that performs the measurement of voltage, resistance, frequency, duty cycle and pulse width as well as the continuity test.

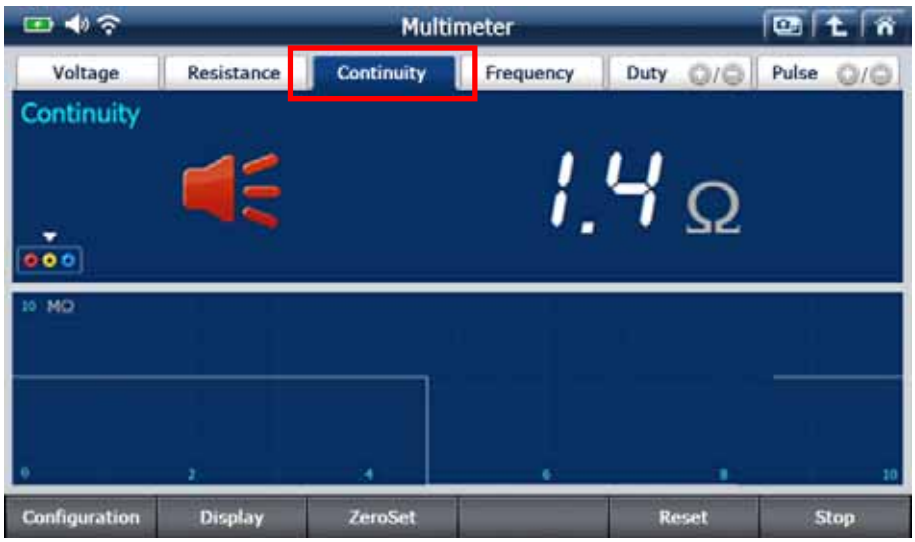
1. Multi-meter Upper Section Control Menu

Voltage : Measures the voltage in the circuit through channel B of the VMI.

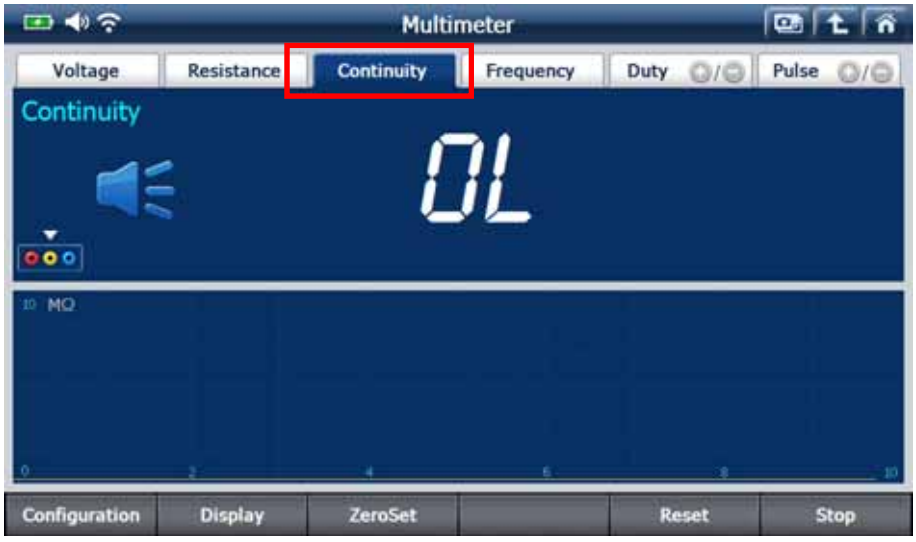
Resistance : Measures the resistance of the circuit or the component through VMI channel B

Continuity : Conducts the Continuity Test on the circuit.

If the circuit is normal and not open, high tone buzzer sounds and the resistance is indicated.

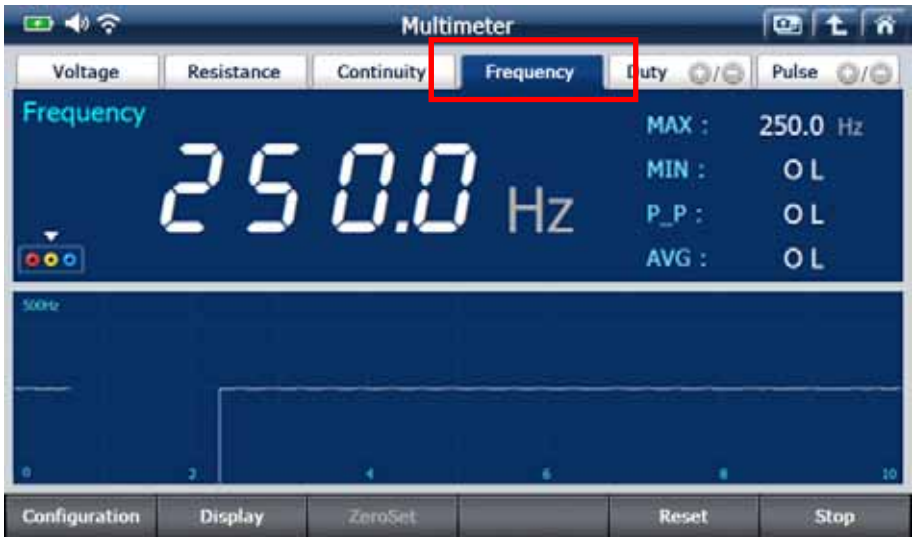


[Continuity Test – Normal / Buzzer Sounds]



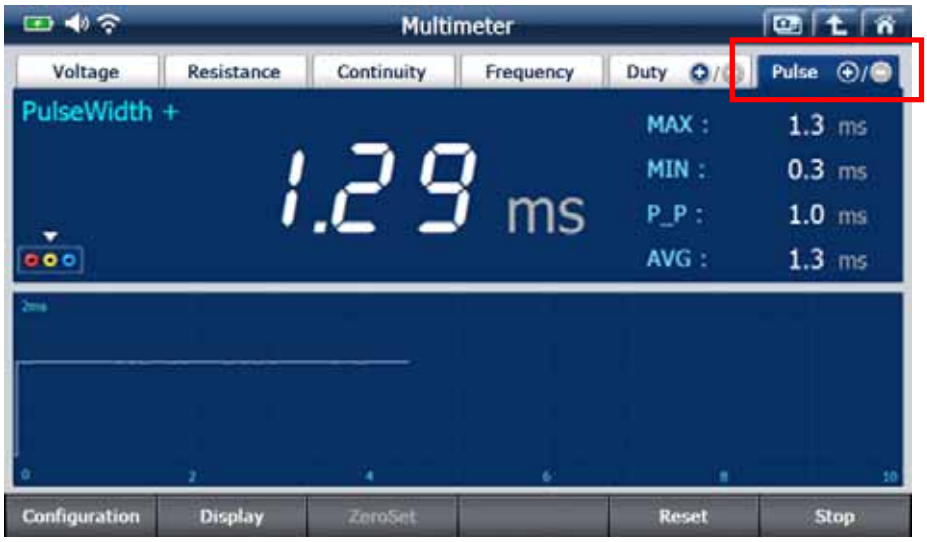
[Continuity Test – Open Circuit / Buzzer Off]

Frequency : Measures the frequency of the input signal through the VMI channel B.



Duty : Measures [+] and [–] duty of the input signal through VMI channel B.

Pulse : Measures the pulse width of the input signal through the channel B of the VMI.

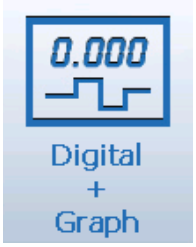


2. Multi-meter Lower Section Control Menu

Configuration : Multi-meter function settings can be configured.

Guide for resistance meter calibration, continuity test buzzer and the related data display when measuring Frequency / Duty / Pulse can be enabled or disabled..
Also the line thickness of the graphing meter function that is presented in the lower half of the multi-meter screen can be selected among 1, 2, 3 or 4 point(s).

Display : The proportion of the main digital readout, graphing meter and the reference data that appear in the combo display can be selected according to the user's preference.

Display Set				
Description	Main digital meter readout only	Main digital meter readout and the reference data	Graphing meter pattern only	Main digital readout and the graphing meter pattern

ZeroSet : Conducts the meter calibration for resistance measurement.

Calibration is recommended before measuring the resistance, please follow the on-screen guide to do the calibration. The calibration guide can be disabled from the configuration button in the bottom.

Multimeter
Voltage
Resistance
Pulse
Zero Calibration
Zero Calibration function is needed to minimize errors when measuring resistance. User may follow the below guide to proceed zero calibration function accordingly.
1. Take positive end of CH-B and negative CH-B forming a short-circuit in the circuit. (Insert the negative end into the hole of the positive end of the CH-B Probe).
CH-B Probe
2. Assure that no other element touches the shorted probes.
3. Start zero calibration function process by pressing "Start" button.
4. If setup the "Guide Display" button into "OFF" status, then zero calibration is executed automatically after next using. For using the guide display again, setup the button into the "ON" in multimeter configuration.
Guide Display
ON
OFF
Start
Cancel
MΩ
Configuration
Display
ZeroSet
Reset
Stop

Reset : Resets the measured values and the min, max and average data.

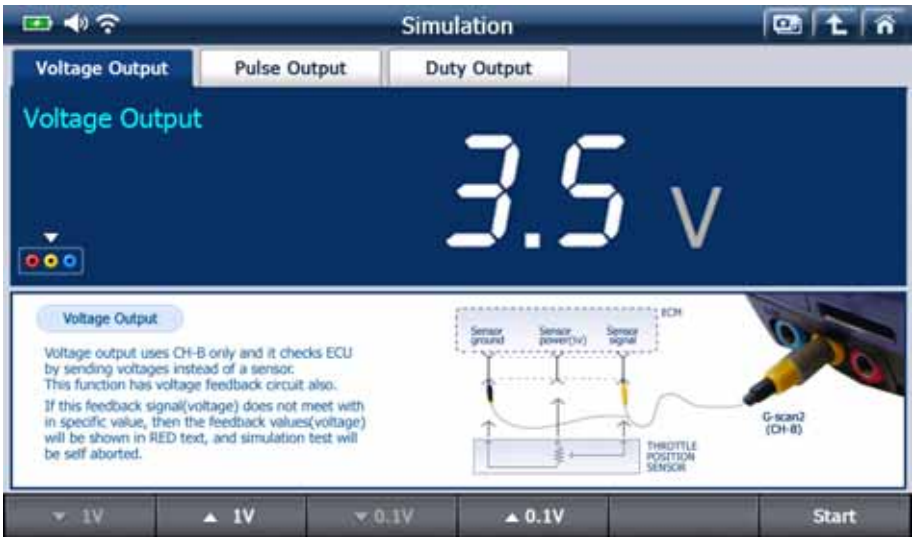
Stop : Stops the measurement

Simulation Function

G-scan2 can actively send out the electric signals to the vehicle's sensor or actuator circuit for in-depth diagnostic purposes.

1. Voltage Output

Sends out the continued voltage signal to the circuit through the VMI channel B, and the voltage level can be manually adjusted by the user. Mainly used for checking the sensor signal wire. Please observe the instruction displayed in the lower half of the G-scan2 screen.



<< x 1V : Lowers the output voltage by 1V

>> x 1V : Raises the output voltage by 1V

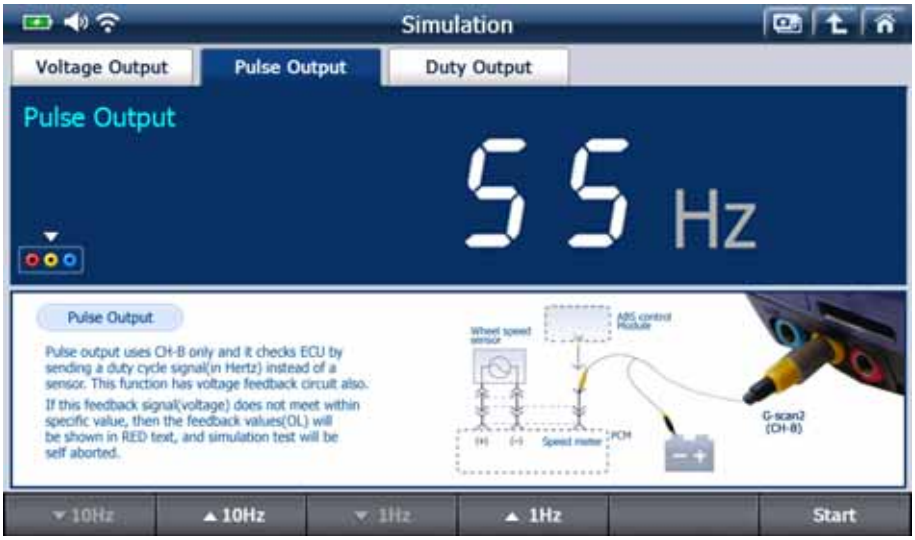
< x 0.1V : Lowers the output voltage by 0.1V

> x 0.1V : Raises the output voltage by 0.1V

Stop : Stops the voltage output

2. Pulse Output

Sends out the 5V pulse signal of the frequency as controlled by the user up to 1K Hz through VMI channel B. Mainly used for checking the digital signal sensors like wheel speed sensor.


Simulation
Voltage Output
Pulse Output
Duty Output
Pulse Output
55 Hz
Pulse Output
Pulse output uses CH-B only and it checks ECU by sending a duty cycle signal(in Hertz) instead of a sensor. This function has voltage feedback circuit also.
If this feedback signal(voltage) does not meet within specific value, then the feedback values(OL) will be shown in RED text, and simulation test will be self aborted.
10Hz
10Hz
1Hz
1Hz
Start

<< x 10Hz : Lowers the pulse frequency by 10Hz

>> x 10Hz : Raises the pulse frequency by 10Hz

< x 1Hz : Lowers the pulse frequency by 1Hz

> x 1Hz : Raises the pulse frequency by 1Hz

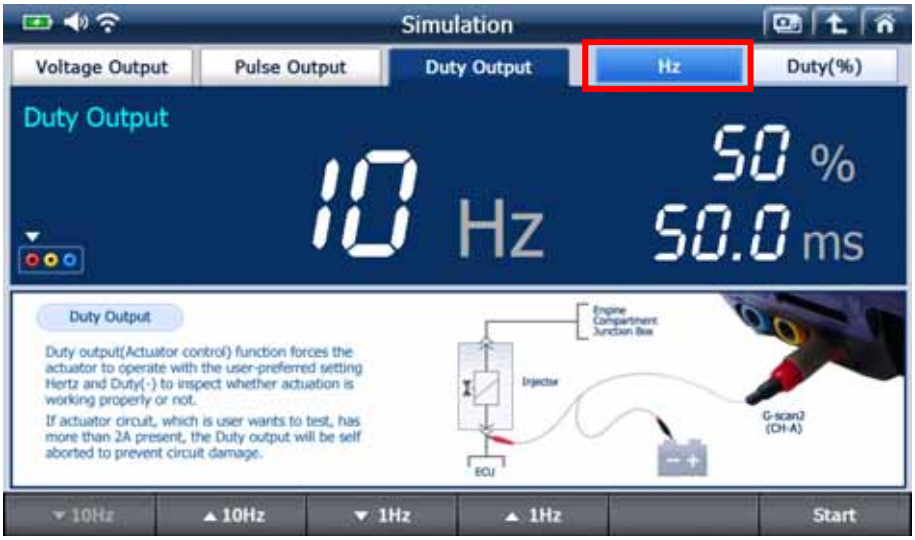
Stop : Stops the pulse output

3. Duty Output

Conducts the test on the actuators such as injectors by sending out the signals of frequency and duty as controlled by the user, through the VMI channel A.

A. Hz

Select Hz button to adjust the frequency of the output duty signal.



<< x 10Hz : Lowers the pulse frequency by 10Hz

>> x 10Hz : Raises the pulse frequency by 10Hz

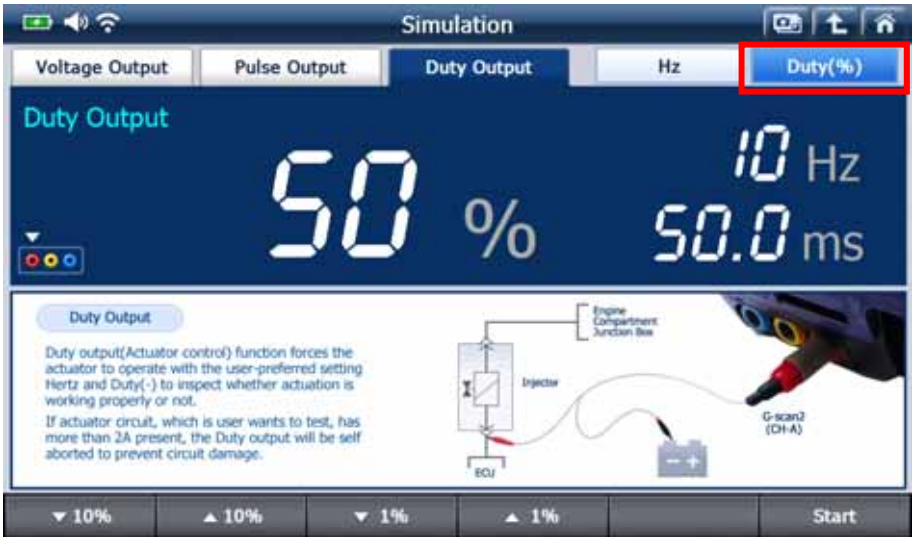
< x 1Hz : Lowers the pulse frequency by 1Hz

> x 1Hz : Raises the pulse frequency by 1Hz

Stop : Stops the duty output

B. Duty (%)

Select Duty (%) button to adjust the duty cycle of the output signal.



<< x 10% : Lowers the output duty cycle by 10%

>> x 10% : Raises the output duty cycle by 10%

< x 1% : Lowers the output duty cycle by 1%

> x 1% : Raises the output duty cycle by 1%

Stop : Stops the duty output

3.6. Favorite

Favorite

The special functions of the specific vehicle models that are frequently used can be added to the favorite list where the listed functions can be simply executed having to make the whole lot of vehicle details selecting procedures.

1. Adding the function to the list

Add a special function to the favorite list by selecting “Favorite” or pressing the [F1] key from the special functions menu.

The function names are marked with the Star or Star+ marks.

Marks	Description
	The special function has been added to the favorite list already.
	The special function is not listed, and can be added to the favorite list.

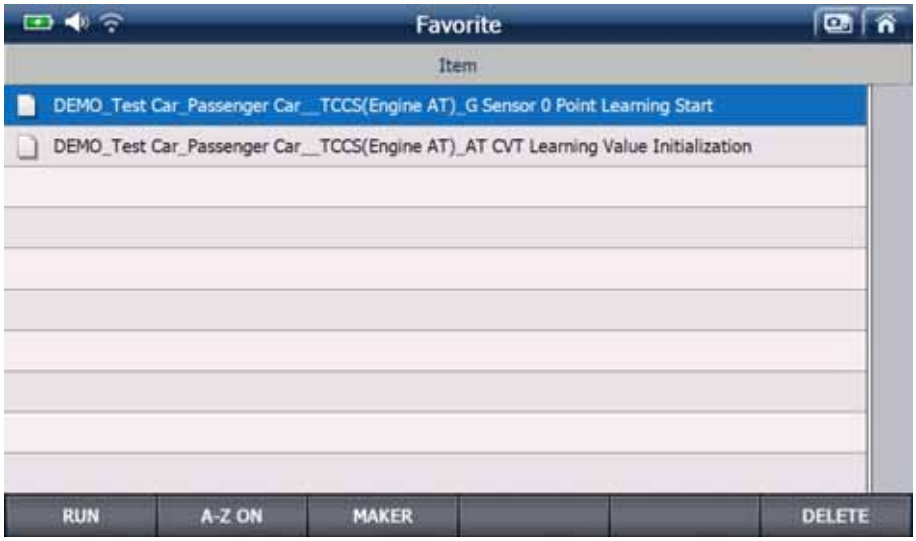
Select the special function with the Star+ mark , then the function is added to the favorite list with your confirmation.

When done, exit the Favorite List control menu by selecting “Back” or pressing the [F1] key.

2. Loading the favorite list

Select “Favorite” icon from the main menu, then the folders are listed as shown below.

Folder	Description
Recents	The advanced functions that have been recently used are listed automatically.
“Manufacture name”	The advanced functions that the user has manually added as the Favorite functions are listed in the car manufacturer name folders.



Select one among the list and select “OPEN” or press the [F1] key to start the function.
The selected function will be executed directly from this list without having to make any further selections.

Select “MAKER” or press the [F3] key to return to the folder selection menu.
Select “DELETE” or press the [F6] key to remove the selected special function from the list.

3.7. G-scan2 System Lock

"Anti-Reverse Engineering" Lock

For the protection of GIT's proprietary right and intellectual property that are embodied to G-scan2, the product contains the "Anti-reverse Engineering" function.

Executing a particular special function repeatedly more than 20 times without resetting communication with the control unit by returning to the upper level menu, which is not supposed to take place under the normal conditions, will be considered as an attempt to reverse engineer the G-scan2.

G-scan2 shows a warning message as shown below in such a case.

Then the detailed warning message will follow in different languages as shown below.

As you scroll down, the same warning messages will be repeated in 9 different languages.

WARNING
For prevention of unauthorized attempt to reverse engineer this device, G-scan is programmed to stop its operation when a function is executed repeatedly.

You are seeing this message because your G-scan has detected that the function being executed now has been repeated exceeding the maximum allowance.

If you keep trying to run the same function without resetting the communication, G-scan will be locked and become unusable.

Please restart G-scan now.

Amaran.
Untuk mencegah percubaan yang tidak dibenarkan mengubah peralatan ini, G-Scan adalah digunakan untuk memperhentikan operasinay apabila terdapat satu fungsi yang sentiasa berfungsi. Kamu ternampak maklumat ini adalah desebabkan G-Scan mendapati fungsi tersebut bukan sahaja berfungsi, malah telah memlebihi had yang maksimum.
Oleh itu, jika kamu asyik memanipulasi fungsi yang sama tetapi tidak memasangkannya semula, G-Scan kamu akan dikunci dan tidak boleh digunakan lagi.

Sila restart G-Scan anda.

警告
为了防止未经授权而试图指挥设备工程的设置，如有不停地重复操作，G-Scan会被自动封锁操作能力。这个信息是因为G-Scan已经发现功能正在不断执行超过被限制次数。
如果不断地尝试去操作同一个功能而没有去重新启动，G-Scan会被封锁而不可使用。

请重新启动 G-Scan.

ПРЕДУПРЕЖДЕНИЕ
В целях предотвращения копирования программного обеспечения производителями других сканеров, в сканере G-SCAN есть защита на случай постоянного повторения проведения одних и тех же операций на сканере большое количество раз.

Если Вы видите данное предупреждение, значит сработала функция защиты ПО сканера. Если Вы продолжите работу со сканером без его перезагрузки, то сканер будет заблокирован.

Немежленно перегрузите сканер!

لمنع محاولات عكس برمجية الجهاز غير المخولة, تم تصميم جي سكان لتوقيف كافة عملياته عند تكرار هذه المحاولات.

انت ترى هذه الرسالة لأننا اكتشفنا محاولة برمجة عكسية على هذا الجهاز, وقد تجاوزت العدد المسموح به من المحاولات.

اذا كنت لاتزال تحاول نفس المحاولات بدون إعادة تشغيل الجهاز أو إعادة اتصاله فسوف يغلق الجهاز نهائيا ويصبح عديم النفع.

الرجاء إعادة تشغيل الجهاز الآن.

تخطى جهازك من محاولة تشغيل غير معتمدة رجاء غلق الجهاز وإبلاغ الوكيل وعدم تكرار محاولة فتح الجهاز لحين إعادة برمجته.

اخطار بسیار مهم

جی-اسکن مجهز به الگوریتمی هوشمند جهت جلوگیری از سو استفاده و

مهندسی معکوس نرم افزار این دستگاه است. در صورتیکه این پیغام را مشاهده می

کنید، برنامه شاهد الگویی غیر عادی بوده است. این الگو معمولا هنگام کپی برداری

از برنامه مشاهده میشود و خارج از حیطه ای است که عیب یابی خودرو به صورت معمول اقتضا می کند.

لطفا دستگاه عیب یاب را کاملا خاموش کرده، و پس از 2 دقیقه مجددا روشن نمایید.

** توجه: در صورتی که دستگاه را خاموش نکنید، دستگاه شما بلافاصله قفل و برای

همیشه کاملا از کار خواهد افتد. مسئولیت عواقب این امر و جبران خسارات وارده به

عهده خود شما خواهد بود و نیلی کار و جی.آی.تی. هیچ مسئولیتی نسبت به این موضوع نخواهند داشت.

警告
本製品に対する無断解析を防ぐために、G-scanはひとつの機能が繰り返して実行される場合、作動を止めるようになっています。最大許容回数を超過してひとつの機能が繰り返し続けて実行されたのが探知されましたので、この警告メッセージを表示します。

もし、この警告メッセージの表示後にも、G-scanを再起動しなく、繰り返してひとつの機能を実行させる場合、G-scanはロックされ、使えなくなります。

今すぐG-scanを再起動してください。

ACHTUNG!
Ihr G-Scan hat festgestellt, dass die jetzt ausgeführte Operation maximale Anzahl an Zugriff überschritten hat.
Um nicht autorisierten Zugriff des Reverse Engineerings zu verhindern ist das G-Scan so programmiert, dass mehrfach wiederholte Operation abgebrochen wird.
Wenn Sie wieder versuchen dieselbe Operation auszuführen, ohne dass Kommunikation zurückzusetzen, wird Ihr G-Scan gesperrt und unbrauchbar.

Bitte starten Sie G-Scan jetzt neu.

คำเตือน
เพื่อป้องกันการลอกเลียนแบบ เครื่อง G-Scan จะหยุดทำงาน ถ้าหัวข้อการใช้งานใดถูกเรียกใช้อย่างซ้ำ ๆ

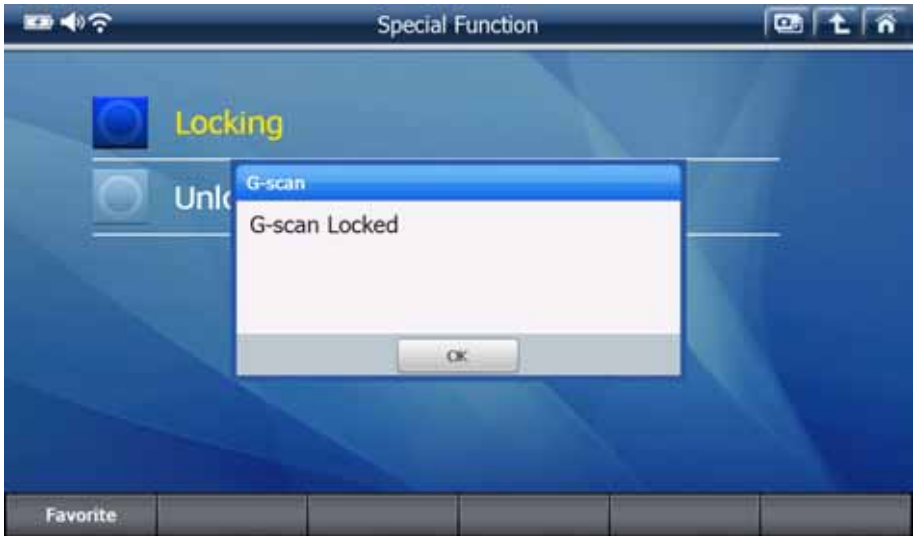
ต่อเนื่องติดต่อกันอย่างผิดปกติ
ถ้าท่านเห็นข้อความนี้ แสดงว่าเครื่อง G-Scan

กำลังได้รับการกระทำดังกล่าว
กรุณาปิดและเปิดเครื่องใหม่ทันที

มิฉะนั้นเครื่องจะถูกล๊อกโดยอัตโนมัติและจะไม่สามารถใช้งานได้อีก

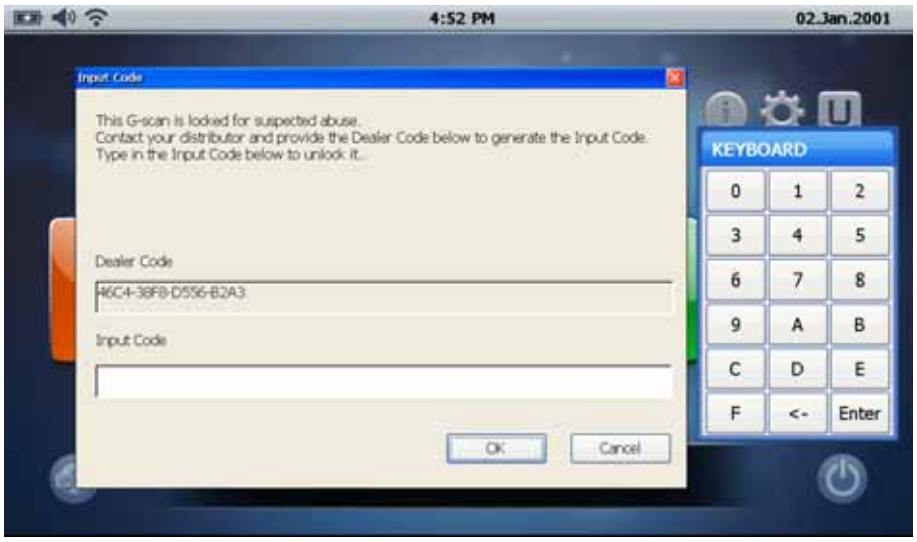
Once prompted by this warning message, please stop using the same function with the G-scan2, turn it off immediately and then restart. The internal counter will be reset and the warning message will not appear unless the condition is fulfilled again.

Despite such warning, if it is ignored and the function is used a couple of times more, G-scan2 finally locks up and ceases to operate normal as shown below.



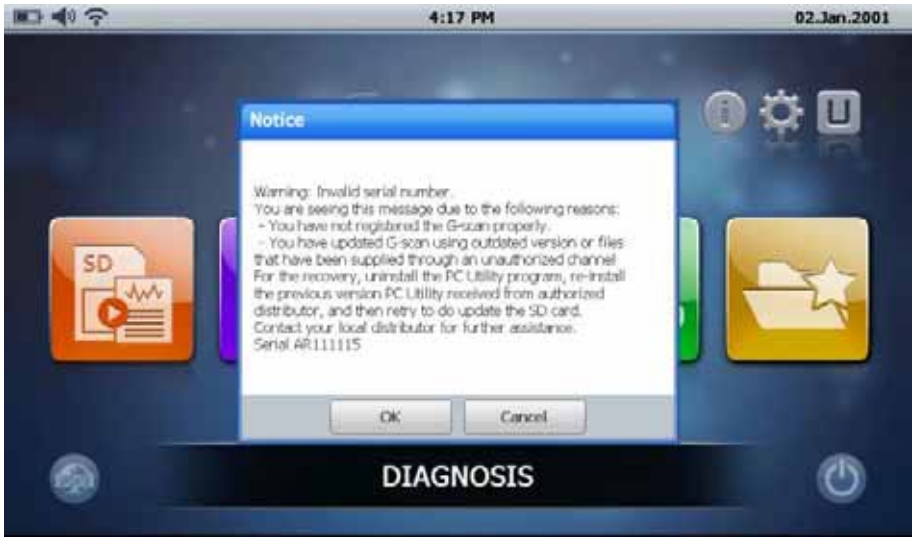
If G-scan2 is locked, it is not recoverable unless the G-scan2 base unit is returned to the authorized local distributor.

The G-scan2 needs to be examined and then unlocked by inputting the unlock code which is provided by GIT HQ in Korea. The process is not subject to warranty service. If you have purchased the G-scan2 from overseas or if you have no authorized distributor in your region, you will be required to return the base unit back to Korea, and you are requested to pay the whole round trip cost.



"Invalid Serial Number" Lock

When serial number information contained in the G-scan2 main board is found not in accordance with information contained in the SD card, G-scan2 pops up the warning message as below and will not operate any more. The only option available when G-scan2 shows this message is turning off by selecting OK.


4:17 PM
02.Jan.2001
Notice
Warning: Invalid serial number.
You are seeing this message due to the following reasons:
- You have not registered the G-scan properly.
- You have updated G-scan using outdated version or files that have been supplied through an unauthorized channel.
For the recovery, uninstall the PC Utility program, re-install the previous version PC Utility received from authorized distributor, and then retry to do update the SD card.
Contact your local distributor for further assistance.
Serial AR111115
OK
Cancel
SD
DIAGNOSIS

As described in the pop-up message, discordance of serial number information among the G-scan2 main board and the SD card may take place in the following events:

- G-scan2's serial number has not been registered at GIT's server properly
- G-scan2 is updated using the outdated version PC Utility
- G-scan2 is updated using the PC Utility released for the other countries (region)

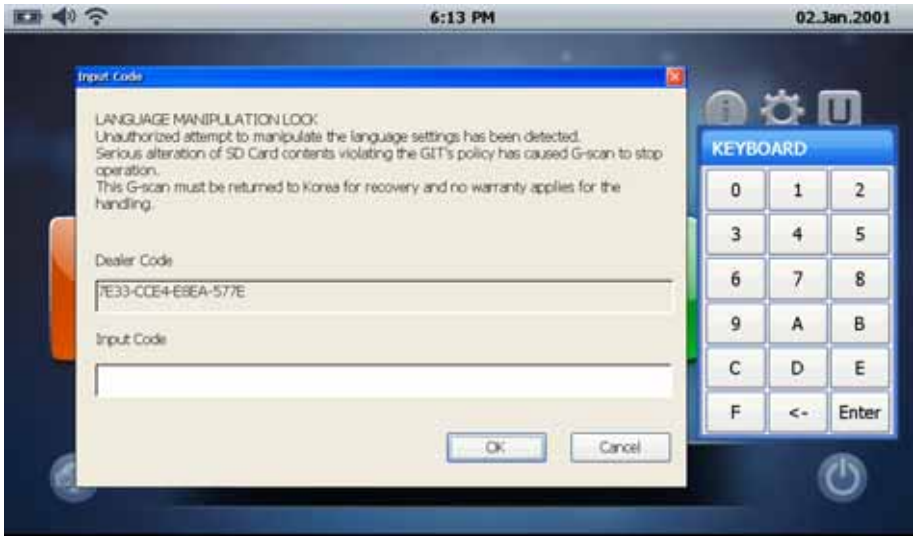
When encountered by this G-scan2 lock problem for the serial number invalidity, contact your local distributor and check if the serial number has been properly registered at the GIT server.
A G-scan2 that has been registered just once will not be locked for the serial number invalidity even when the update subscription expires (Refer to the details in the Software Update part of the next Chapter). Only the new auto makers, systems and functions that have been newly added appear disabled with the padlock sign on the menu, but G-scan2 shall be normally operating with the rest of the menu.

If the G-scan2 is confirmed that it has been registered even once, the recommended remedy will be

1) Uninstall the PC Utility that you used for the last update from the PC completely.
2) Get the latest version PC Utility and install the program
3) Download the latest version software from GIT server using the online update function, or, if the offline data is available, from the PC using the offline update function. Please refer to the Software Update chapter in this manual for more details.

"Language Manipulation" Lock

G-scan2 is loaded with different settings and applications for different countries. Supported languages and covered auto makers are defined differently in each regional version. This is very important for the satisfaction of local customers of different countries who demand different local languages and coverage.
Adding any language other than those supported in the original configuration by means of file copying replacing or overwriting in the SD card is not allowed, and such attempt will result in making it G-scan2 locked and non-functional.


6:13 PM
02.Jan.2001
Input Code
LANGUAGE MANIPULATION LOCK
Unauthorized attempt to manipulate the language settings has been detected.
Serious alteration of SD Card contents violating the GIT's policy has caused G-scan to stop operation.
This G-scan must be returned to Korea for recovery and no warranty applies for the handling.
Dealer Code
7E33-CCE4-E8EA-577E
Input Code
OK
Cancel
KEYBOARD
0 1 2
3 4 5
6 7 8
9 A B
C D E
F <- Enter

Once a G-scan2 is locked for Language Setting Manipulation, an unlock code is required for restoring the G-scan2 and the code is not released unless the base unit is returned to the HQ in Korea for investigation. The restoration is not subject to warranty service.

Chapter 4. G-scan2 PC Utility

4.1. Installation and Removal

4.2. Main menu

4.3. Software Update Online

4.4. Software Update Offline

4.5. Data Viewer

4.6. PC Utility Configuration

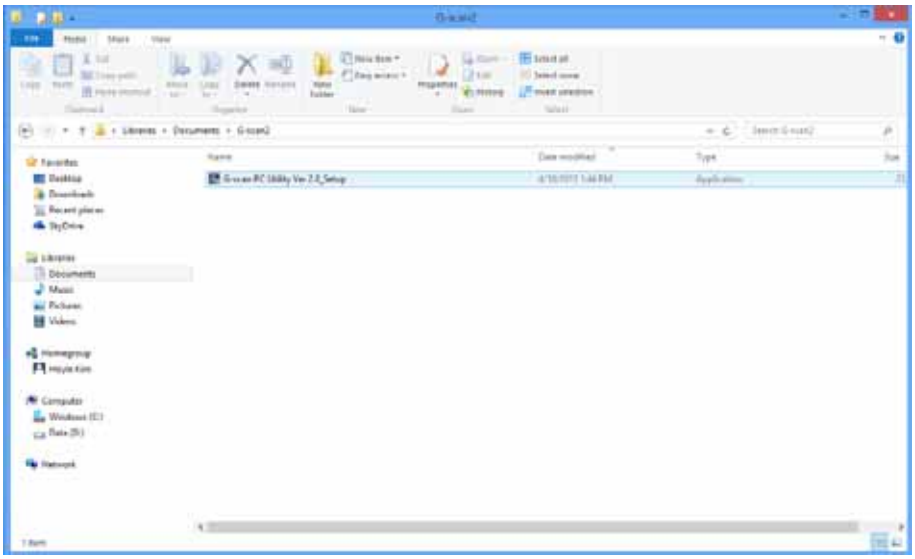
4.7. Network Printer Setup

4.1. Installation and Removal

G-scans PC Utility program provides Online and Offline software update, Record Data / Captured Image viewer and network printer setup functions.

PC Utility Software Installation

Find and run the PC Utility Setup file from the installation CD or the downloaded files folder of PC.

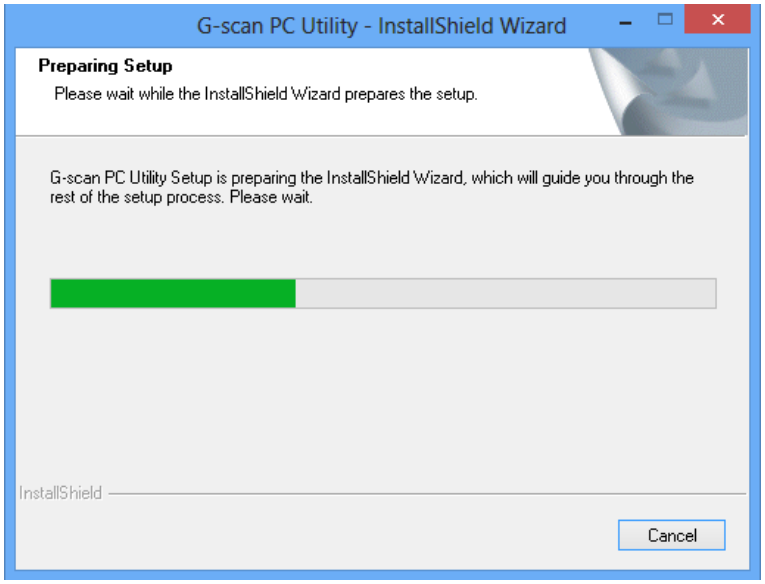


Compatible PC Operating System

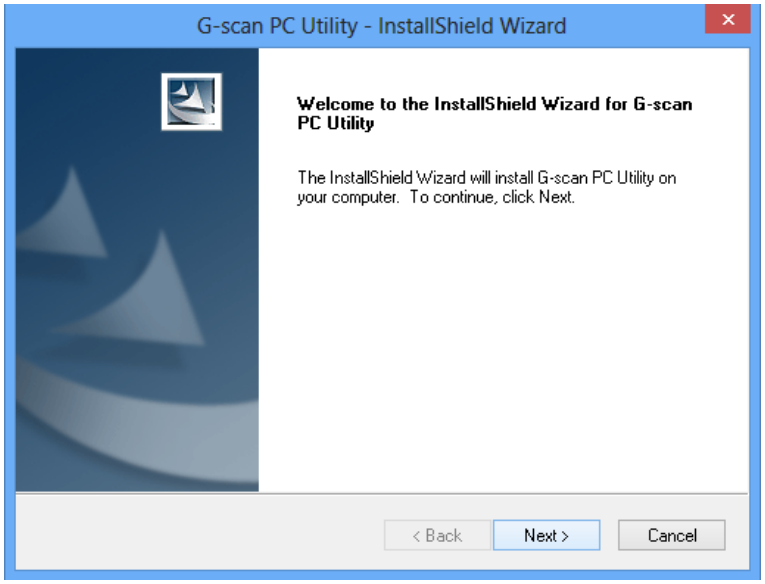
- Windows XP Professional (SP3 or higher)
- Windows Vista
- Windows 7
- Windows 8

The InstallShield Wizard is initiated and prepares for the installation of the PC Utility.

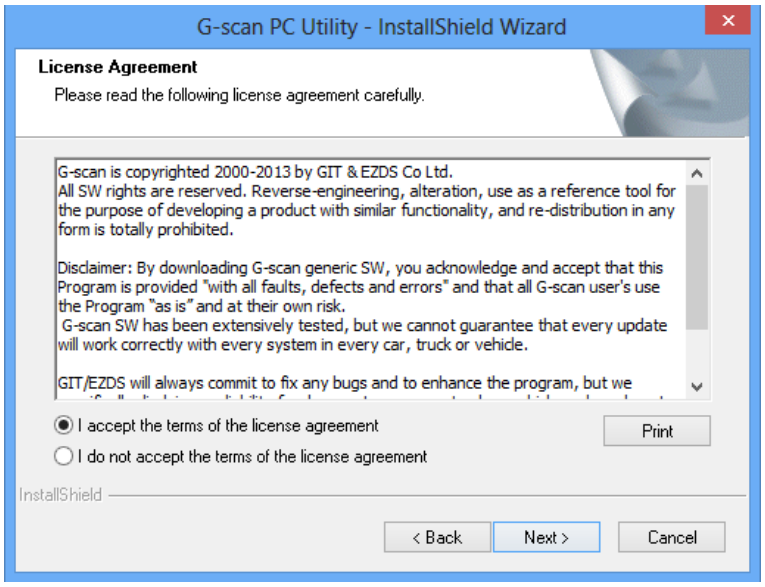
The actual display of installation and program removal may appear differently according to the operating system of the PC, and please note that this manual s based on Windows 8.


G-scan PC Utility - InstallShield Wizard
Preparing Setup
Please wait while the InstallShield Wizard prepares the setup.
G-scan PC Utility Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.
InstallShield
Cancel

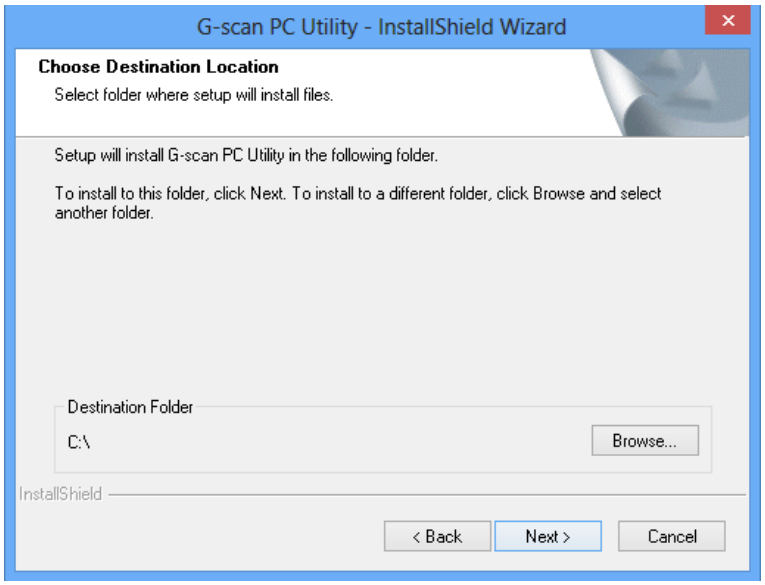
Select “Next (N)” to start the installation.


G-scan PC Utility - InstallShield Wizard
Welcome to the InstallShield Wizard for G-scan PC Utility
The InstallShield Wizard will install G-scan PC Utility on your computer. To continue, click Next.
< Back
Next >
Cancel

Select [I accept te terms of the license agreement] and then [Next>] to continue..


G-scan PC Utility - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
G-scan is copyrighted 2000-2013 by GIT & EZDS Co Ltd.
All SW rights are reserved. Reverse-engineering, alteration, use as a reference tool for the purpose of developing a product with similar functionality, and re-distribution in any form is totally prohibited.
Disclaimer: By downloading G-scan generic SW, you acknowledge and accept that this Program is provided "with all faults, defects and errors" and that all G-scan user's use the Program "as is" and at their own risk.
G-scan SW has been extensively tested, but we cannot guarantee that every update will work correctly with every system in every car, truck or vehicle.
GIT/EZDS will always commit to fix any bugs and to enhance the program, but we
I accept the terms of the license agreement
I do not accept the terms of the license agreement
Print
InstallShield
< Back
Next >
Cancel

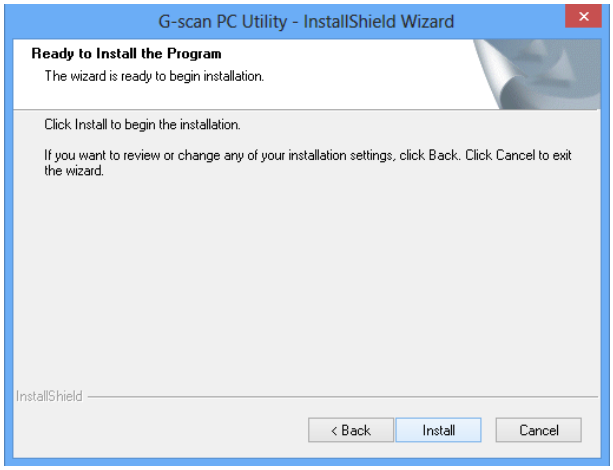
Browse and select the folder to which PC Utility Software is installed, and click “Next (N)” to confirm. Keeping the default setting unchanged is recommended.

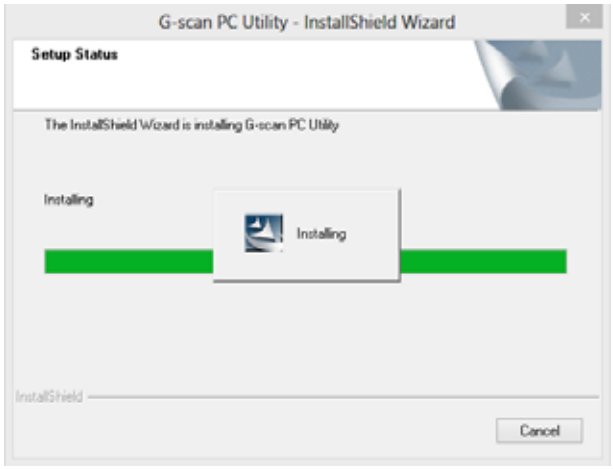

G-scan PC Utility - InstallShield Wizard
Choose Destination Location
Select folder where setup will install files.
Setup will install G-scan PC Utility in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\
Browse...
InstallShield
< Back
Next >
Cancel

Caution

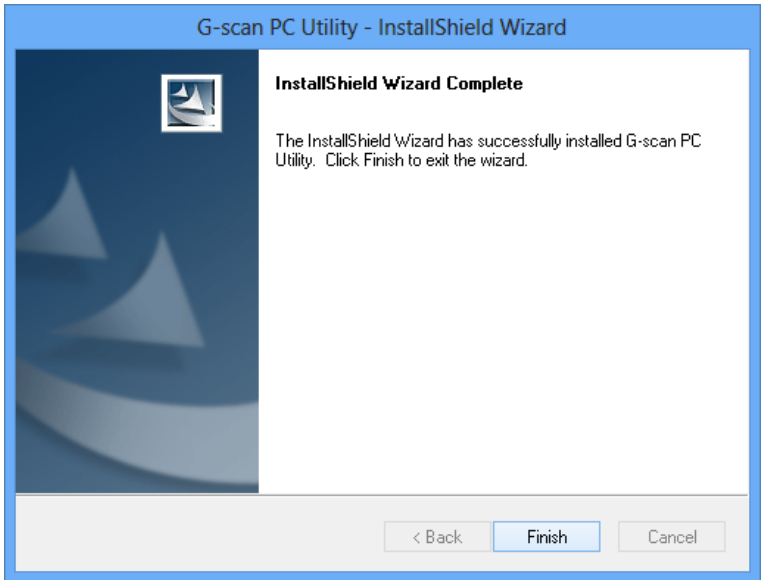
The recorded data and the images that have been saved to the PC using the older version PC Utility will need to be moved to the new path where the new PC Utility is installed in order to load them using the new PC Utility.

Installation begins when selecting [Install]


G-scan PC Utility - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel



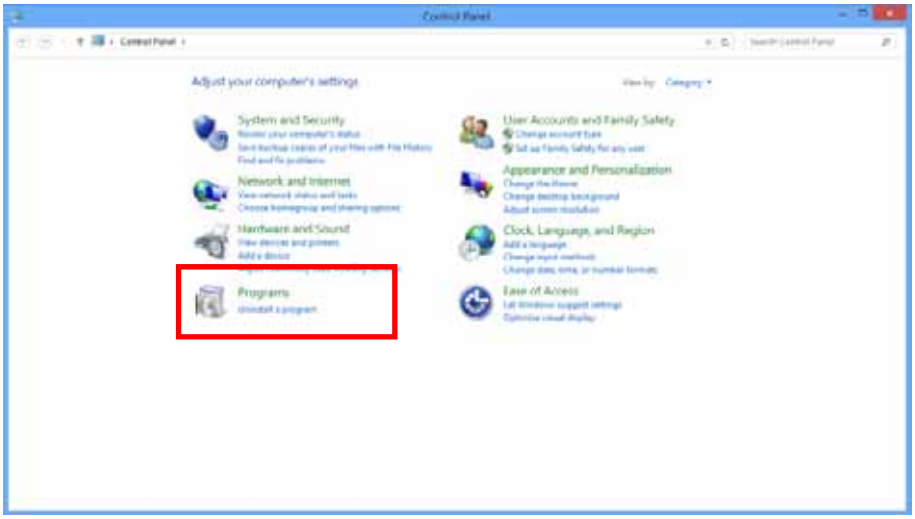
Click “Finish” to complete PC Utility Software installation.


G-scan PC Utility - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed G-scan PC Utility. Click Finish to exit the wizard.
< Back
Finish
Cancel

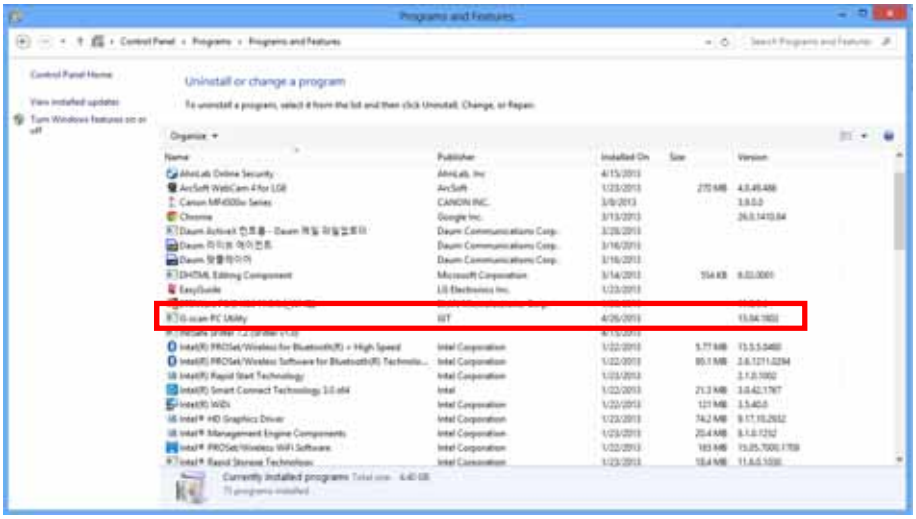
Check if the PC Utility Software icon is created on the desktop.

PC Utility Software Removal

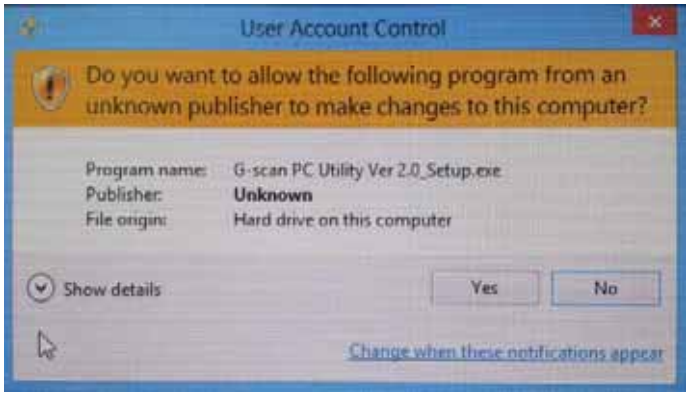
Click “Program Add/Remove” from the Control Panel to remove PC Utility Software from the PC.



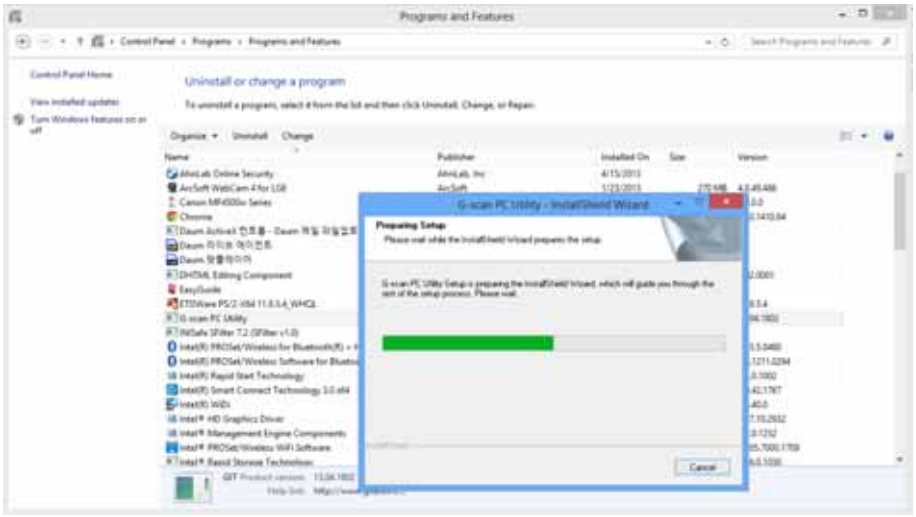
The programs installed on the PC are listed, then select “G-scan PC Utility” and click “Remove” button to uninstall the program, or double click the program name.



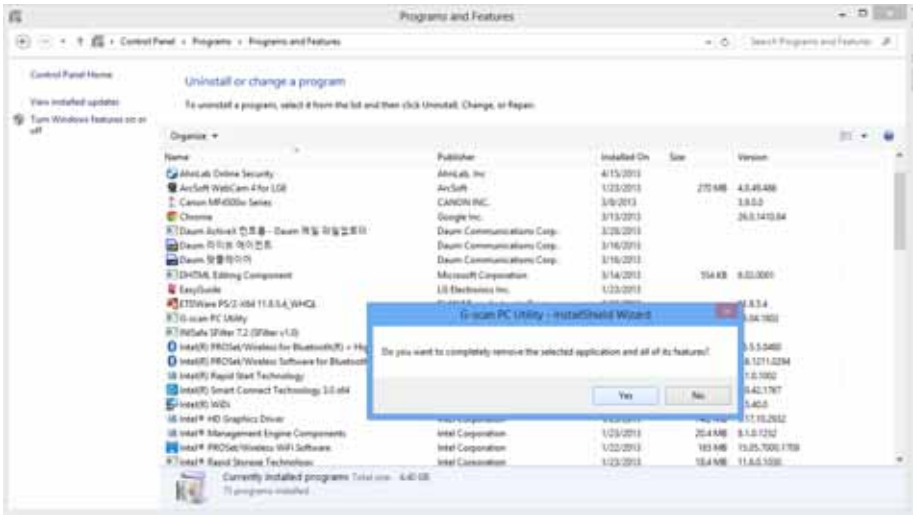
Click “Yes(Y)” to confirm PC Utility Software removal at the pop-up query as shown in Fig.11.


User Account Control
Do you want to allow the following program from an unknown publisher to make changes to this computer?
Program name: G-scan PC Utility Ver 2.0_Setup.exe
Publisher: Unknown
File origin: Hard drive on this computer
Show details
Yes
No
Change when these notifications appear

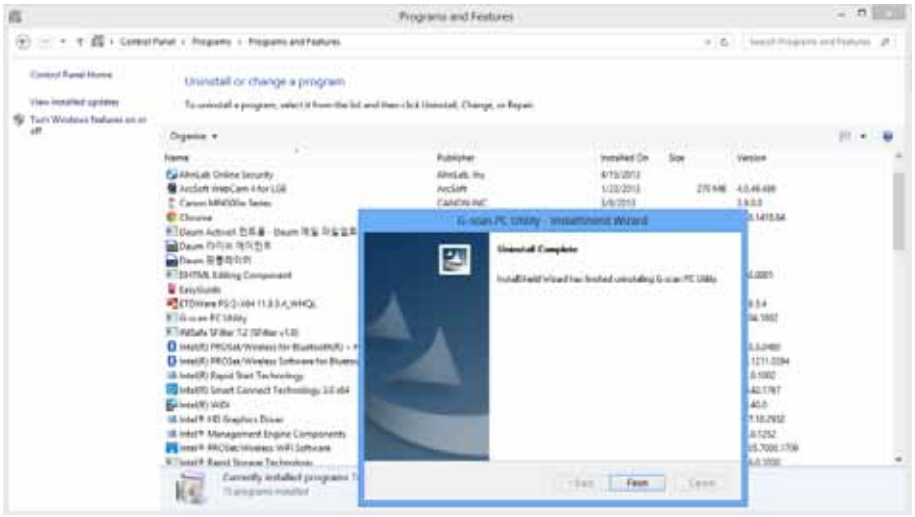
Progress bar of uninstall process follows the confirmation.



Select [Yes] at the additional queries if necessary.



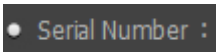
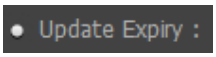
Click “Finish” to finalize the PC Utility Software removing process as shown in Fig. 13.



4.2. Main Menu

G-scan and G-scan2 shares the same PC Utility. Run the “G-scan PC Utility” by a double click on the shortcut icon on the PC desktop, then the program is loaded and the main menu appears.

This 3-button main menu is typically for G-scan. And the main menu is changed to the 4-button structure with the additional [Network Printer Setup] button as shown below, when the G-scan2 serial number is inputted in the configuration menu or while updating.

Icon	Description
	Loads on-screen user manual for reference
	Various user settings including G-scan2 serial number, alarm and user information can be configured
	Serial number of G-scan2 is indicated as saved in the configuration menu
	Expiry date of update subscription
	Selects and downloads the G-scan2 software for the vehicle brands from the server to the PC through the internet and then updates the diagnostic database in the G-scan2 SD card.
	Updates the diagnostic database in the G-scans SD card using the update software that have been installed to the PC with the PC utility.
	Reviews the screen capture images, recorded data and scope data saved in the SD card or the PC hard disk.
	Sets up the G-scan2 direct network printing configuration using the printer installed to the PC.
Close (X)	Quits PC Utility Program

4.3. Software Update Online

G-scan2 PC Utility Software AA-4-3. Online Update

Preparation

Downloads the G-scan2 software from the GIT's download server to the PC through the internet, and then the downloaded software is transferred to the SD Card.

Before commencing, please make sure to prepare for downloading software by inserting the G-scan2 SD Card to the PC.

1. Turn G-scan2 power OFF and remove the SD Card from the base unit
2. Insert the SD Card to the provided Card Reader
3. Insert the Card Reader to a USB slot of the PC

Use of the provided SD Card is always recommended, and the use of third party SD Card Reader or direct insertion to the PC's SD Card slot may cause the corruption of the downloaded files.

Caution

Make sure to move the SD Card Write Protection Tab to the UNLOCK position before inserting to the PC.

PC Utility may not function properly if the write protection tab is at the LOCK position

Software Update (Online)

When the SD card is properly inserted to the PC's USB port using the SD Card Reader, please select [Software Update (Online)] button to continue.

Select the disk drive that the USB port with the SD card is assigned. An SD card is recognized as a removable disk drive by the PC's Windows system when it is inserted to the PC USB port. Check the drive assigned to the SD Card using the windows explorer or My Computer.

Type in the serial number of the G-scan2, then PC-Utility communicates with the download server and checks the subscription validity and regional version of the serial number, and lists the vehicle brands that can be downloaded.

PC UTILITY
Serial Number :
Update Expiry :
Manual
Configuration
LOGIN
Serial
Confirm
Cancel
Data Viewer
Software Update(Online)
Updates software the latest version
Downloads the G-scan software from the server to the PC through the internet and then updates the diagnostic database in the G-scan SD card.Different version can be selected from the server's list and downloaded for individual manufacturer using this On-line update function.Please insert the G-scan SD card to the PC using the provided SD card reader.

The Smart Update program is “region sensitive”. If the provided serial number is found violating GIT’s regional market protection policy, no manufacturer will be listed as shown below, therefore unable to download any update software

If the inputted serial number is found not registered, invalid or incorrect, the GIT download server will respond with the error message as shown below.

Vehicle Brand Selection

[New] mark

Download server checks the availability of new updates by comparing the software versions contained in the SD card with the latest versions of the server, then puts the [NEW] sign at the end of each vehicle brand if any new update is available for downloading.

If the SD card's software is the latest one, there will be no [NEW] marks and the update version number will be indicated in blue. If the SD card's software needs updates, then the brand will be [NEW] marked and the version numbers are indicated in red.

Manufacturer Select / Deselect

PC Utility checks the brands that need updates automatically. Add or remove the manufacturer among the list by ticking on the check boxes. You can select the manufacturers that you want to update and, at the same time, you can exclude the manufacturers that you don't want to update.

Select All / Deselect All

Tick on the check box in the table header, and it will select or deselect all the brands at a time.

Old version restoration

If the server contains the older versions, you can select and download the older version for each manufacturer according to your preference.

Update Files Download

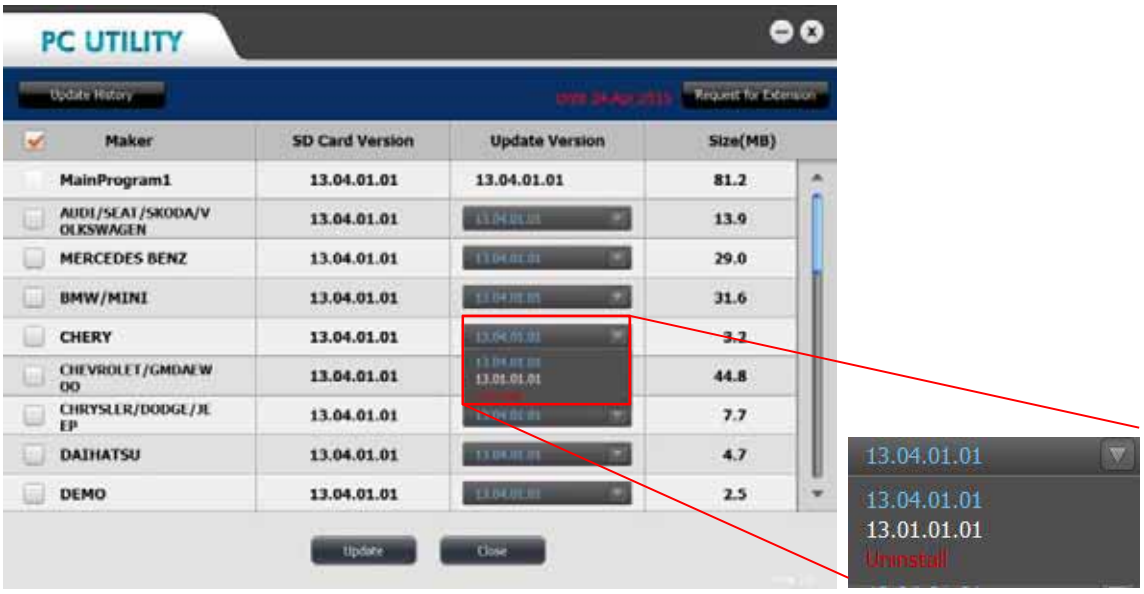
When the vehicle brands and the version numbers are all selected, select the [Update] button to start the downloading procedure. PC Utility downloads the files from the server through the internet, decompresses the downloaded files on the PC, then replaces the files of the SD Card with the downloaded files by copying and verifying.

Removing a brand from the Menu

Unnecessary or unwanted vehicle brands can be completely removed from the G-scan2 menu.

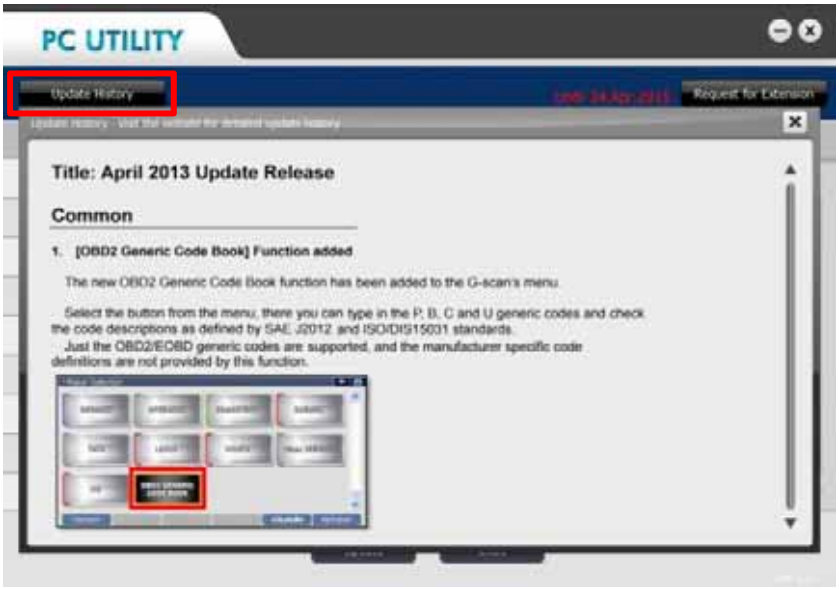
Select “Uninstall” from the version number selection drop down menu of the brand to be removed, then select [Update] button then the software contained in the SD Card is removed and the vehicle brand does not appear in the G-scan2 manufacturer selection menu.

The removed brand will be restored when downloading any version software from the server again.



History

Select the [Update History] button in the upper left corner to view the details of the latest update.


PC UTILITY
Update History
Request for Extension
Title: April 2013 Update Release
Common
1. [OBD2 Generic Code Book] Function added
The new OBD2 Generic Code Book function has been added to the G-scan's menu.
Select the button from the menu, there you can type in the P, B, C and U generic codes and check the code descriptions as defined by SAE J2012 and ISO/DIS15031 standards.
Just the OBD2/EOBD generic codes are supported, and the manufacturer specific code definitions are not provided by this function.

Request for Extension

In case the update subscription has been expired or approaching the expiry date, send a request for update extension by clicking on the “Request for Extension” button. When the button is selected, a window pops up and the customer is required to input the contact details as shown above. When the request is submitted, the GIT server automatically relays the provided contact Information to the authorized local distributor in the customer’s region

4.4. Software Update Offline

Preparation

Offline update that provides the update files contained in a DVD, a memory stick or any kind of storage device is also supported because customers and distributors in many countries are unable to use or have difficulty in utilizing the online update features that require broadband internet connection for fast data transfer.

The update software package is primarily provided contained in a DVD or as a downloadable installation program every 3 months, which is redistributed to the individual customers through the local distributor. Please contact your local distributor and inquire the availability of the update DVD if you want to update your G-scan2 using the Off-line update features.

The difference between Online and Offline update is the media through which update files are transmitted to the user's PC.

- Online update downloads the files from GIT server to the PC through the internet
- Offline update installs the database to the PC from the DVD (or a storage device of any kind)

When the files are transferred to the PC, then they should be moved from the PC to the SD card to run on the G-scan2, and this procedure works basically the same for both online and offline update functions

Before commencing, please make sure to prepare for downloading software by inserting the G-scan2 SD Card to the PC.

1. Turn G-scan power OFF and remove the SD Card from the base unit
2. Insert the SD Card to the provided Card Reader
3. Insert the Card Reader to a USB slot of the PC

Use of the provided SD Card is always recommended, and the use of third party SD Card Reader or direct insertion to the PC's SD Card slot may cause the corruption of the downloaded files.

Software Update (Offline)

When the SD card is properly inserted to the PC's USB port using the SD Card Reader, please select [Software Update (Offline)] button to continue.

The rest of the procedure works the same as for the Online update.

4.5. Data Viewer

Data Viewer Function

Screen captures and recorded data parameters saved in the SD Card memory while using G-scan2's diagnostic functions can be reloaded to the PC for review, copy to the PC or delete, and processed for file format conversion.

Insert the SD card to the PC's USB port using the SD Card Reader, then select the [Data Viewer] button from the PC Utility main menu.

Caution

The recorded data and the images that have been saved to the PC using the older version PC Utility will need to be moved to the new path where the new PC Utility is installed in order to load them using the new PC Utility.

File copy to PC and deletion

The recorded files saved in the SD card are listed on the left side of the screen, and the files contained in the PC are listed on the right side of the screen (appear as blank) as shown below.

Recorded Data files in the SD card can be copied to the PC.

Select the file on the SD card file list (right half of the screen) and select button.

Recorded Data files contained in the PC or the SD card can be removed when Delete button is selected.

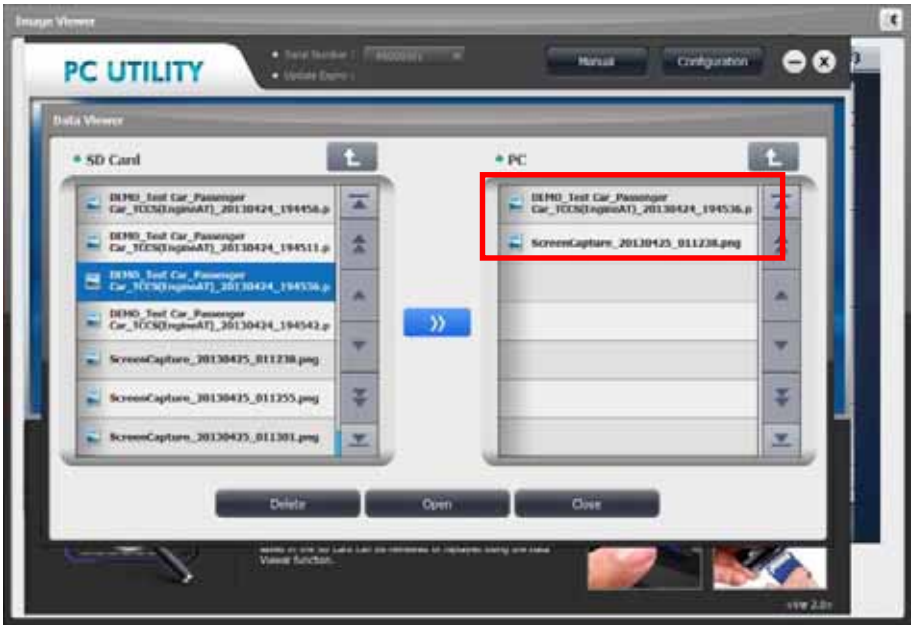
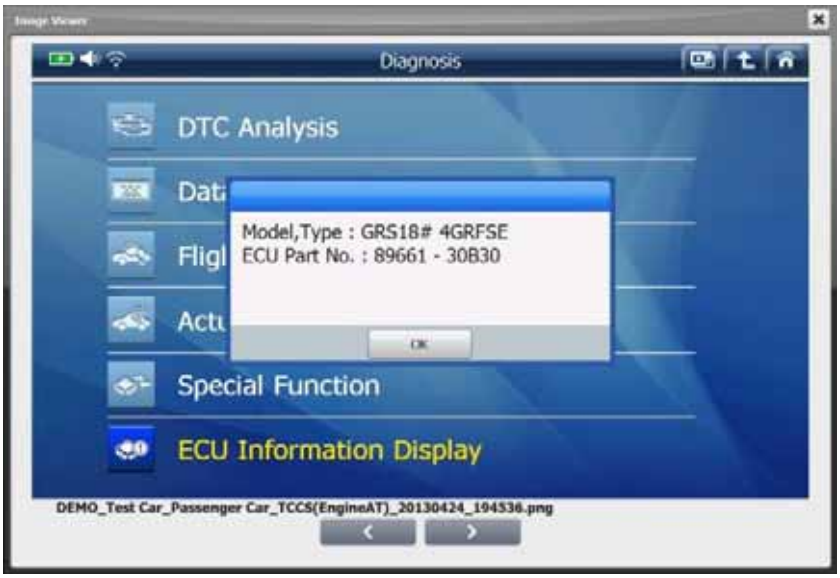


Image Viewer

Saved image files can be loaded and reviewed by opening the file.



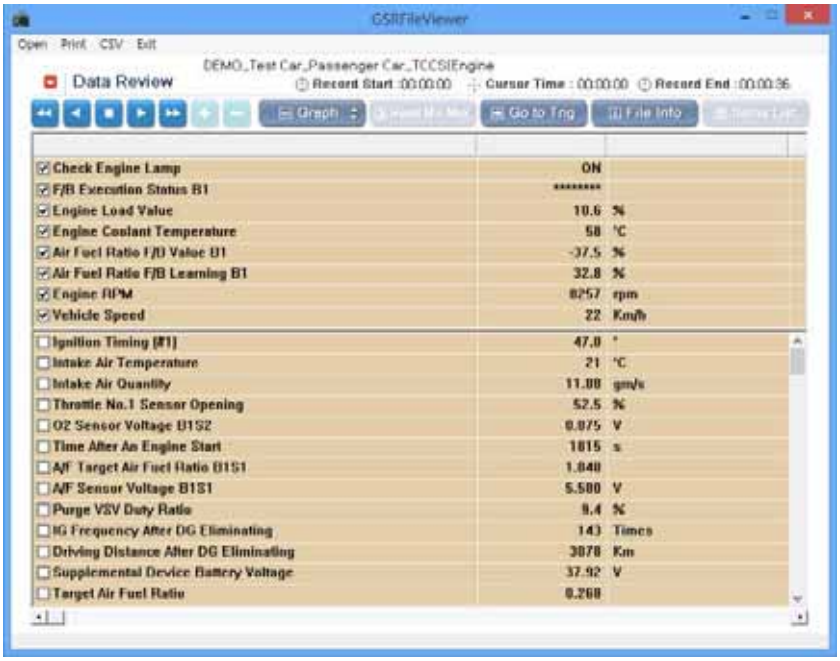
Select < or > button to navigate the image files in the folder back and forth.

Data Viewer

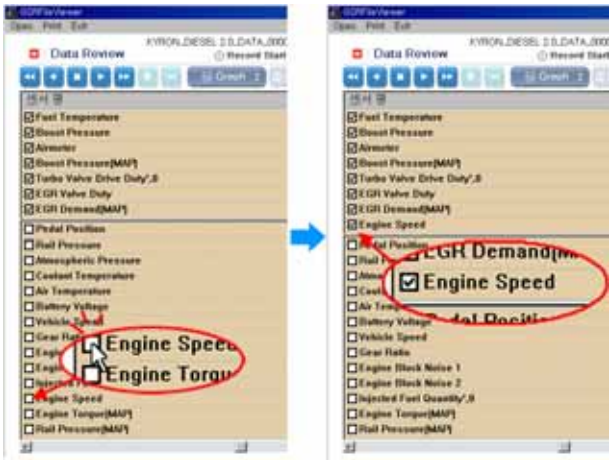
Text and Graph Modes

Select and open the recorded data from the menu, then the GSR File Viewer program runs to show the text based data parameters as shown below.

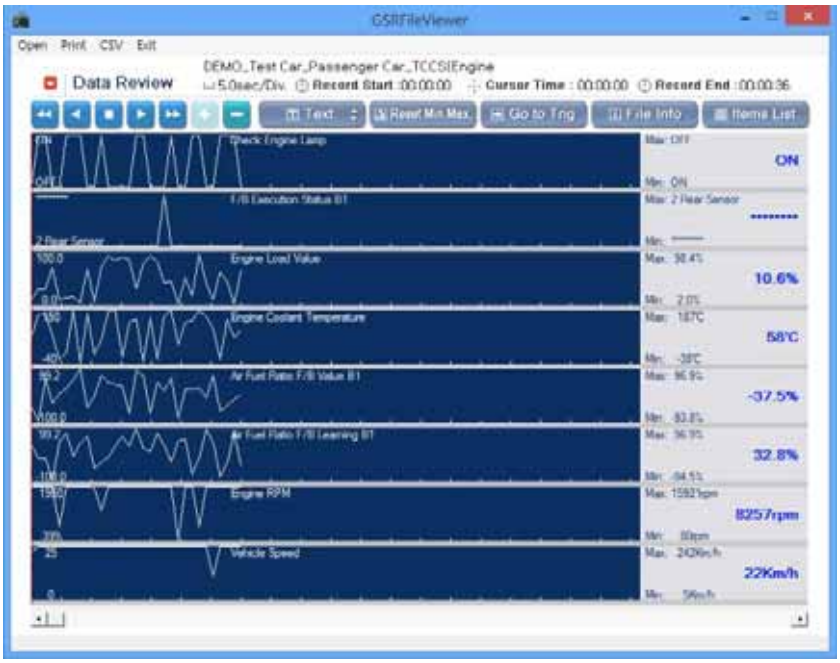
Display mode is converted to a graphical mode when the Graph button is selected.


GSRFileViewer
Open Print CSV Exit
DEMO_Test Car_Passenger Car_TCCSIEngine
Data Review
Record Start :00:00:00
Cursor Time : 00:00:00
Record End :00:00:36
Graph
Go to Trg
File Info
Check Engine Lamp ON
F/B Execution Status B1 ********
Engine Load Value 10.6 %
Engine Coolant Temperature 58 °C
Air Fuel Ratio F/B Value B1 -37.5 %
Air Fuel Ratio F/B Learning B1 32.8 %
Engine RPM 8257 rpm
Vehicle Speed 22 Km/h
Ignition Timing (#1) 47.0 °
Intake Air Temperature 21 °C
Intake Air Quantity 11.08 gm/s
Throttle No.1 Sensor Opening 52.5 %
O2 Sensor Voltage B1S2 0.875 V
Time After An Engine Start 1815 s
A/F Target Air Fuel Ratio B1S1 1.048
A/F Sensor Voltage B1S1 5.580 V
Purge VSV Duty Ratio 9.4 %
IG Frequency After DG Eliminating 143 Times
Driving Distance After DG Eliminating 3878 Km
Supplemental Device Battery Voltage 37.92 V
Target Air Fuel Ratio 0.268

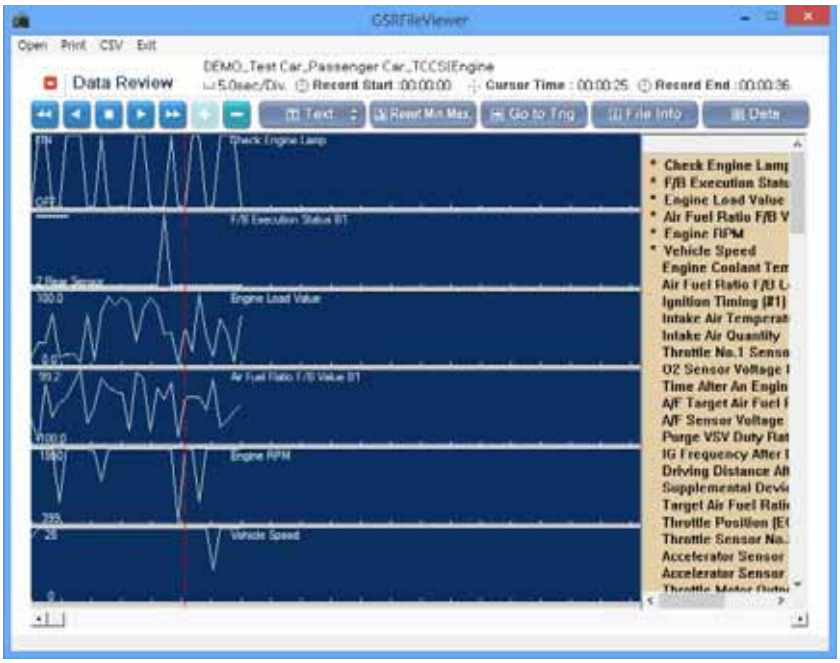
In order to select particular data parameters among the data list and view them in graphic mode, mark the check box in the head of each line as illustrated below. The selected parameters are moved to the top of the screen and vice versa.



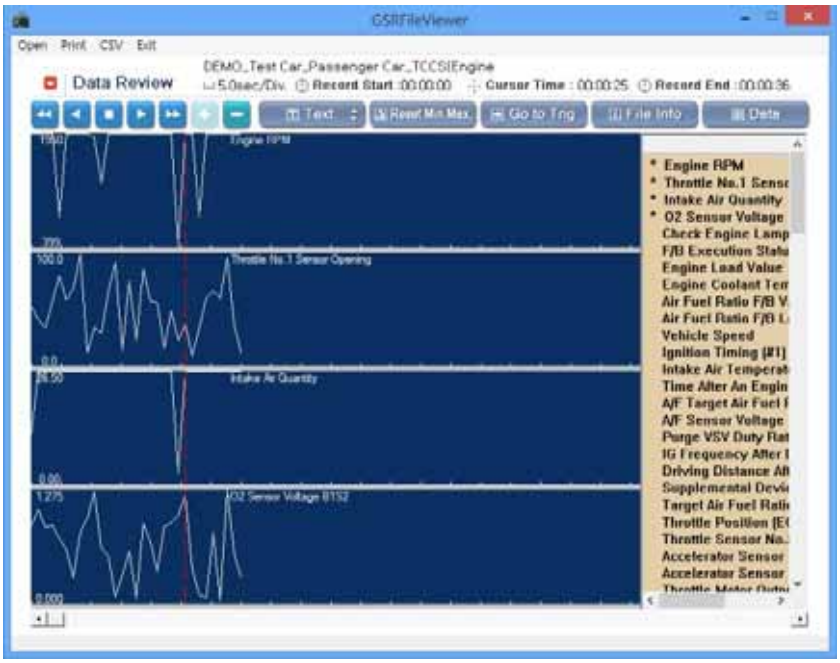
The selected parameters come up in graphs when the display mode is changed to the graphical mode. Note that up to 8 parameters at a time can be displayed in the graphical mode.



Adding, removing or replacing the parameter is possible in the graphical display mode by selecting the Items List button in the top right of the screen.



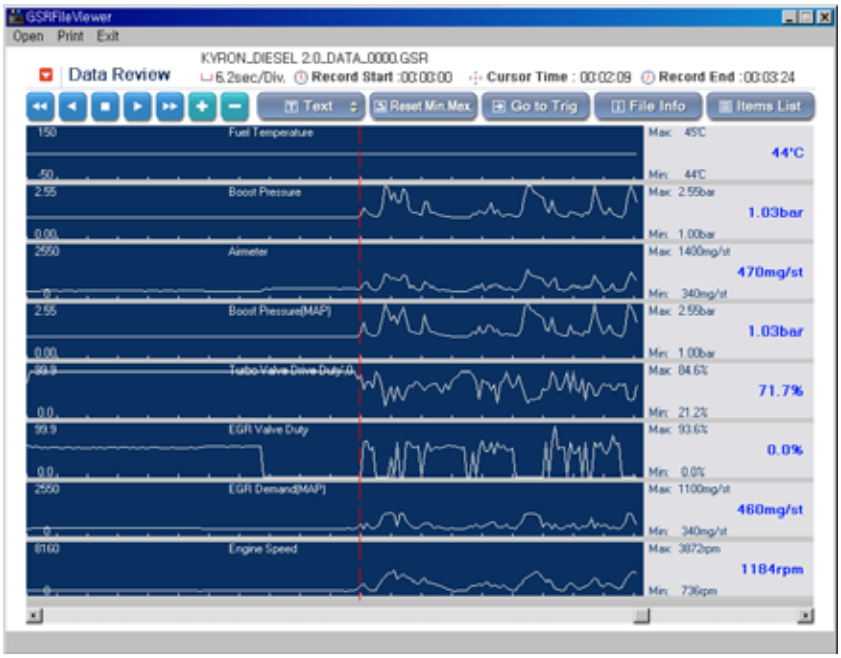
The parameters that are currently shown in graphs are indicated with the star (*) mark in the head of the name. Click on a parameter name with the star mark will exclude the parameter from the list, and the number of graphs that appear on the screen is decreased as much, and vice versa.



Cursors

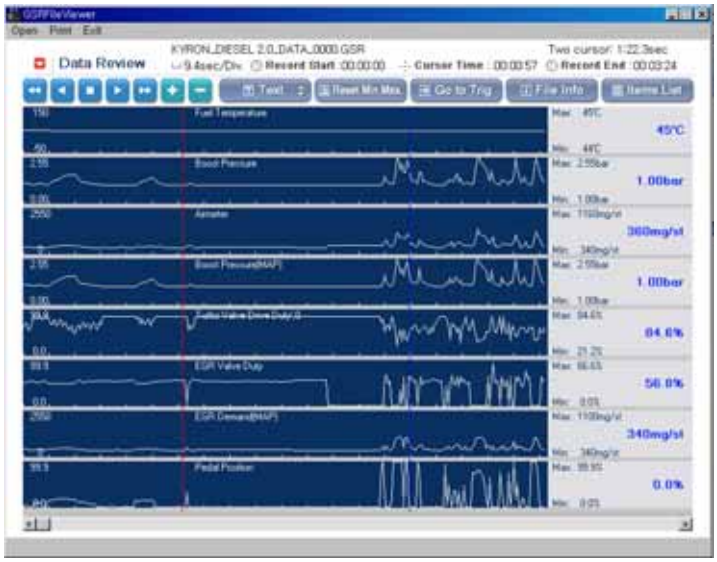
Cursors are available in graphical display mode only.

Cursor in this function refers to the parameter reading on a particular moment on the time(x) axis of the graphs.



Pressing the left mouse button after placing the mouse pointer on any particular coordinate on the graphs turns the Cursor A on, which appears are a dotted vertical red line.
Time elapsed until the Cursor A point is indicated in the top of the screen as “Cursor Time: 00:02:09”
Also the data readings of each parameter at the Cursor A point are displayed on the right side of the screen as shown above.

The Cursor B appears as the dotted blue vertical line when the right mouse button is pressed, and disappears when the button pressed again as shown in Fig. 13.
The time difference between the cursors is indicated in the top of the screen – “Two cursor: 1:22.3sec”.



The readings of each parameter at the moment cursor A is pointing are displayed on the right side of screen in blue bold letters.

Max and Min values are indicating:
With cursor A only: The lowest and the highest points that appear on the current screen.
With cursor A and B: The minimum and the maximum values between the Cursor A and Cursor B points.
* Selecting the

button resets the min/Max values to the reading of the first frame.

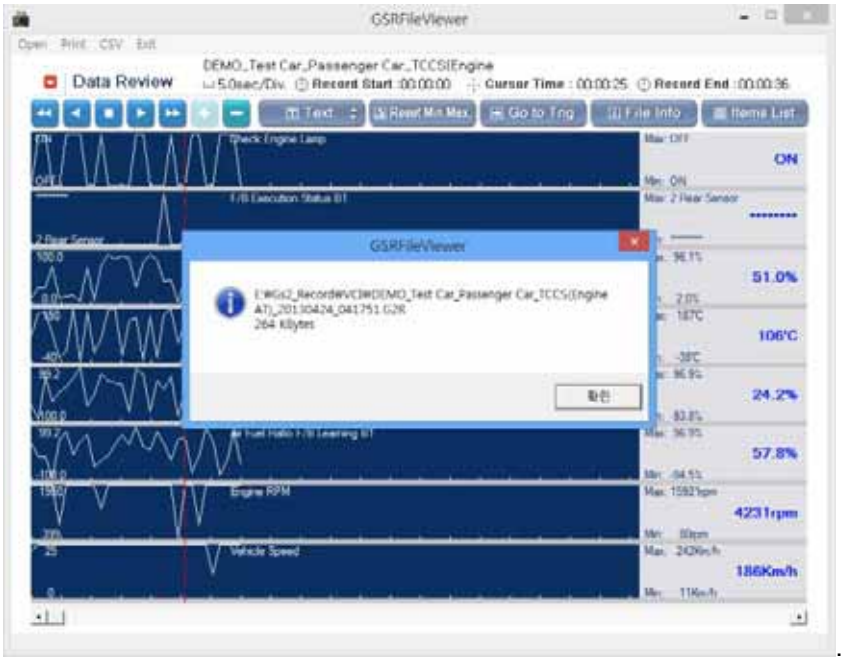
Go to Trigger

A trigger refers to the particular moment when the user pressed the Trigger button while recording data parameters, and selecting Go to Trig button instantly moves the cursor to the triggered point.

In the text display mode, the parameters and data reading of the frame (page) at the trigger point will be displayed.

File Info

A window with the details of the Recorded Data file pops-up when the File Info is selected.
The location of the file in the SD card, file size, data run time as well as the tested vehicle information such as car make, model name and engine type are provided.



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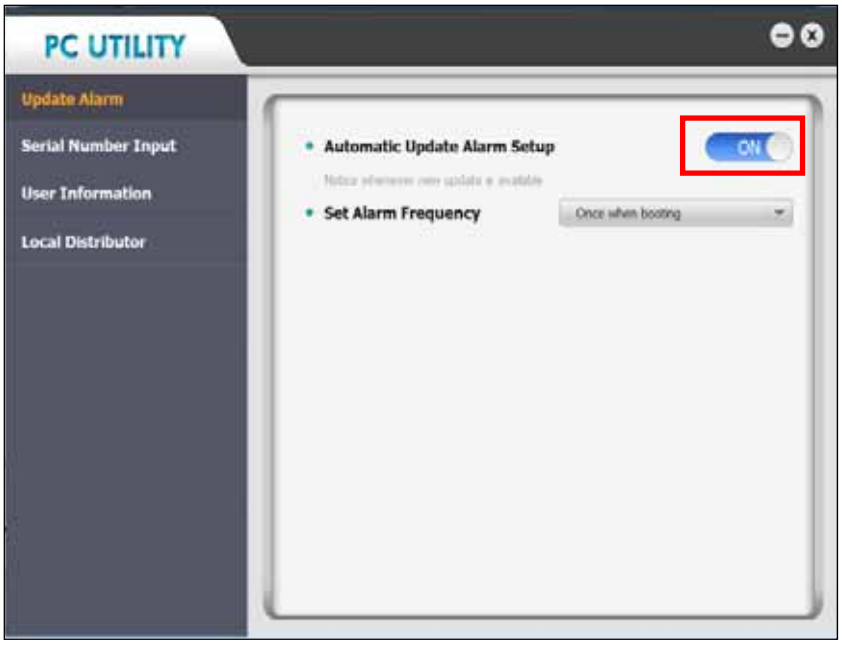
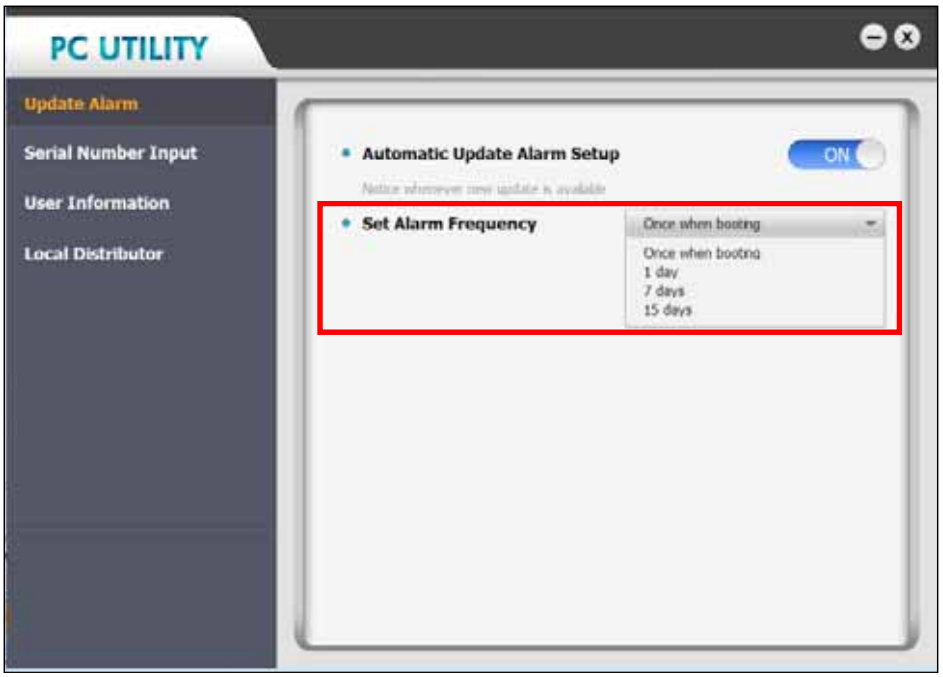
In the configuration menu, software update alarm setting and user information (serial number) saving is supported. Run G-scan2 PC Utility Program and click “Configuration”..

Update Alarm



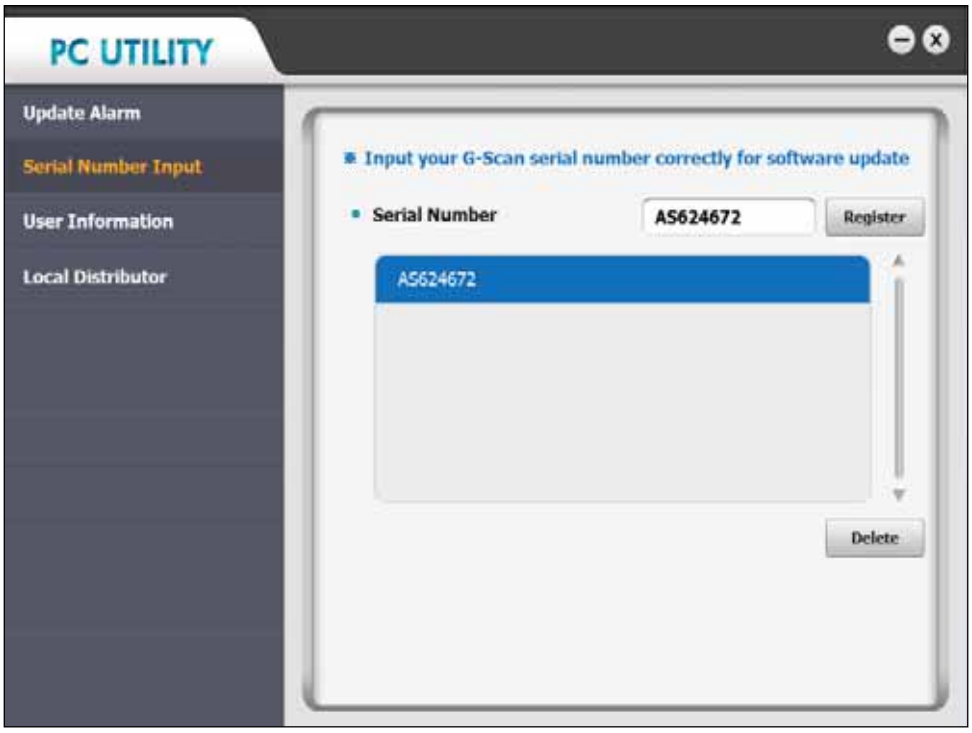
Update Alarm is a function that the PC logs on to the GIT download server automatically to check the availability of new updates, and then informs the user if it finds any update downloadable. Automatic Update Alarm can be toggled On or Off in the menu as shown above.

If Automatic Update Alarm is turned “ON” then make a further selection on the interval defining how often the PC should check the server from the drop-down menu as shown below: “Once when booting”, “1 day”, “7 days” and “15 days”



Serial Number Input

Type in the serial number of the G-scan2 and select the [Register button, then the serial number can be selected from list when downloading the updates. You do not have to check and type in the serial number each time.



Icon	Description
Register	Registers the new serial number
Delete	Deletes the registered serial number

Caution

Please note that this “serial number input” is just a simple user convenience function that helps the user to select the serial number from the list rather than typing in the whole number each time. This is different from product registration, and please be advised that the product registration can be done by the authorized local distributor only.

User information

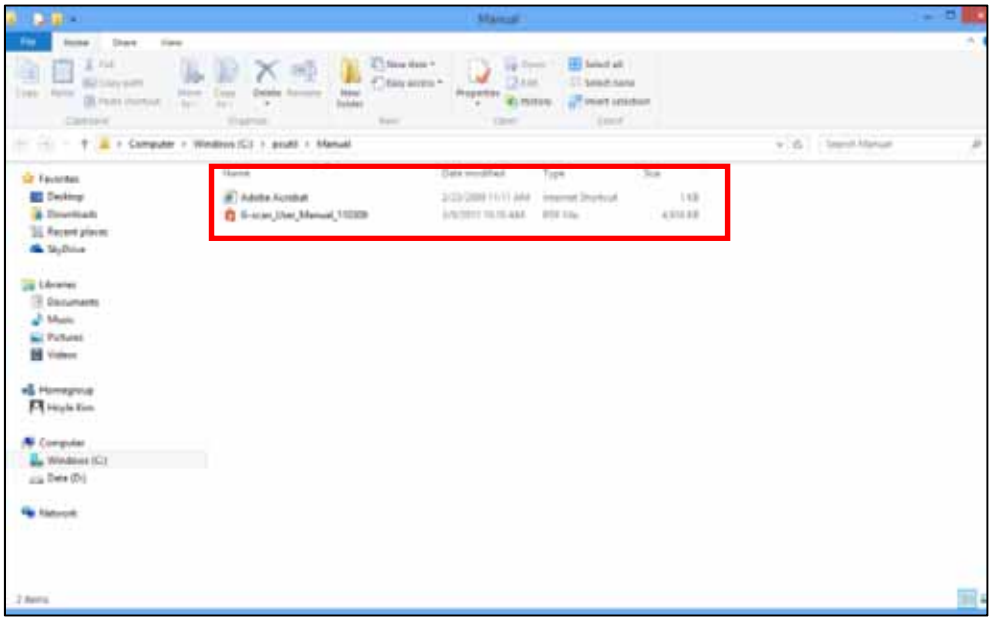
Type in the workshop or business details, then the information will be used when printing the screen captures or saved data. Inputted information is not transferred to GIT and not shared for any purposes.

User information

If the product has been registered, you can check the authorized local distributor information who is supposed to provide technical support and warranty service to you.

Manual

Selecting the [Manual] button runs the windows explorer opening the folder that includes the user manual file. The manual is provided in the PDF format and it can be opened by “Acrobat Reader®” program of which installation program is downloadable from the Adobe website without cost, and also included in the provided G-scan2 PC Utility CD.



Utilizing the onboard WiFi module, G-scan2 is capable of printing the captured image through the network printer that is connected to the PC where the PC Utility program is installed.
Please observe the three conditions below:

1. The PC that the PC Utility is installed needs to be logged on to the wireless network.
2. The WiFi module of G-scan2 needs to be activated and logged on to the same Wireless network.
3. The printer must be connected to the PC as the default printer.

Select [Network Printer Setup] button from the G-scan2 PC Utility Program main menu as below.

Then select among [AutoPrint] and [Deactivate].

AutoPrint

Allows G-scan2 to detect the printer connected to the PC automatically so that it can print out the captured images when commanded by the user.

Open Image Viewer

Deactivates the direct network printing function. Instead of printing, G-scan2 runs the Image Viewer and shows the captured screen on the LCD.

PC UTILITY
Manual
Configuration
Software Update (Online)
Software Update (Offline)
Network Printer Setup
NetworkPrinterSetup
AutoPrint
Open Image Viewer
SAVE
CANCEL

Chapter 5. Appendix

5.1. G-scan2 Limited Warranty

5.2. Discard of Used Equipment

5.3. CE/FCC Notification

5.1. G-scan2 Limited Warranty

Providing that this product has been installed and used as instructed in this operating manual, GIT will repair G-scan2 product (base unit other than software with new or reconditioned parts, free of charge for two (2) years from the date of original purchase in the event of defect in materials or workmanship.

During the first 1 year of this 2-year warranty period, GIT will cover the freight cost for return trip of the G-scan2 base unit for repair service, and for the remaining second 1 year period, the customer shall pay the return trip freight cost while the labor and part costs are still covered by GIT.

Functioning accessories including cables and connectors are warranted for 1 year from the data of original purchase.
Non-functioning parts and consumable accessories including but not limited to base unit plastic case, carry case and parts thereof, plastic bags, printed material and CD or DVD.
Lithium-ion battery module is warranted by the manufacturer for 6 months only as the standard policy of the industry.

The warranty is extended solely to the original purchaser. A purchase receipt or other proof of evidencing the date of original purchase will be required to be presented before providing necessary warranty service.

YOU ARE REQUIRED TO REGISTER G-SCAN AND USER INFORMATION TO GIT WEBSITE IMMEDIATELY. GIT HOLDS THE RIGHT TO REFUSE PROVISION OF ANY SERVICE FOR THE PRODUCT THAT HAS NOT BEEN REGISTERED.

This warranty only covers failures caused by defects in materials or workmanship, which may occur during normal use. It does not cover damage occurs during shipment or failures which may be caused by products, non-genuine parts or accessories not supplied by GIT, or failures resulting from act of god, alteration, accident, misuse, introduction of liquid material or any other foreign matter into the product, abuse, neglect, improper installation, maladjustment of consumer controls, improper maintenance, modification or service conducted by any one unauthorized by GIT.

GIT SHALL NOT BE LIABLE FOR LOSS OF DATA OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGE RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO THE APPLICABLE WARRANTY PERIOD SET FORTH ABOVE.

GIT's entire liability and your exclusive remedy under this warranty shall be limited to the replacement, or any defective parts or functions in the products, which is returned to GIT or its authorized local distributor, together with a copy of the purchasing receipt, during the aforementioned warranty period. Anything in the foregoing to the contrary notwithstanding, GIT shall have no obligation for any defects in the product resulting from your storage thereof, or for defects that have been caused by operation of the product other than on the operation manual or in environmental conditions other than those specified by GIT or by alteration, accident, misuse, abuse, neglect, mishandling, misapplication, installation, maladjustment of consumer controls, improper maintenance, modification or damage that is attributed to acts of God.

This limited warranty gives you specified legal rights, and you may also have other rights, which vary from country to country. The laws of Republic of Korea, without regard to its conflict-of-laws rules, will govern this Limited Warranty.

To obtain help or technical Assistance, please contact your local distributor.

5.2. Discard of used equipment

WEEE (Waste Electrical and Electronic Equipment) symbol as shown in Fig. 1 is indicated on the back of G-scan2 base unit. Please note that G-scan2 is subject to this regulation for disposal of Waste Electrical and Electronic Equipment, therefore you are kindly requested to follow the suggested rules.

WEEE is applied to EU member nations as well as Non-EU member European countries with separate waste collection systems.

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help conserve natural resources. For more information on recycling of this product, please contact your community authority, your household waste disposal service or your local distributor.

EU

This product is CE marked according to the provision of the R&TTE Directive (99/5/EC). Here by G.I.T Co., Ltd.. declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

CE 0678

FCC STATEMENT

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.